

The Iron Age

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Some Links in the History of the Locomotive.

A few months since the *London Engineer* published an engraving, enlarged from a sketch made by Mr. James Nasmyth in 1830, of a locomotive engine on the Liverpool and Manchester Railway, believed by Mr. Nasmyth at the time to be the Rocket. It was pointed out at the time that if this were really the Rocket, the engine must at some time subsequently have undergone considerable alterations, so that the Rocket in the South Kensington Museum could have next to nothing of the real engine which it pretends to be about it. The appearance of Mr. Nasmyth's sketch made a considerable sensation, especially among old railway men, and many letters were received asserting that Mr. Nasmyth was mistaken, and that there never was in 1829 or 1830 more than one Rocket—namely, the famous engine which may be regarded as the progenitor of the modern locomotive. For some time the opponents of Mr. Nasmyth's statement had it all their own way, and it seemed to be beyond question that Mr. Nasmyth had mistaken the Northumbrian for the Rocket. But after a little time other writers appeared on the scene, and some of these said that they believed there really were two Rockets, and that Mr. Nasmyth might be right, after all. Without attempting to analyze the whole of this voluminous correspondence, it will suffice to say that investigation has shown two Rockets to have been on the Liverpool and Manchester Railway. Our illustration on this page represents a sketch, made on the 12th of

in many books that the rails were of cast iron. This is not the fact. They were of wrought iron, in part at least. Mr. Birkinshaw proposed rolling them in rolls made purposely to give the fish-belly, and such rails were rolled 18 feet long—a great triumph for those days. About the 23d of October, the celebrated Rainhill competition resulted in the award of the £500 prize to Stephenson for the Rocket. The particulars of the trials are too well known to require to be mentioned in detail here.

Up to this point there is no difficulty: all about the Rocket is well known. But no writer has said what became of the Rocket in the interval between the Rainhill trials and the opening of the Liverpool and Manchester Railway on the 15th of September—that is, a period of 11 months. All that was known until a comparatively recent period is that the engine went back to Stephenson's works and had some alterations made. But questions on this point have elicited considerable information, which may be briefly summarized here. After the Rainhill competition was over, some experiments were made with the engine by Mr. Wood, and in the course of a month or so the engine was put to work ballasting, and appears to have been employed steadily at that duty. During this period it met with two, if not three, accidents—running off the line twice, killing one man, and on one occasion turning something like a somersault. In the meantime the Stephensons were hard at work building more engines. The Rocket had served its purpose and was discarded, an entirely new type of boiler being introduced. The boiler of the Rocket consisted of a barrel with 24 tubes in it, and to this was tacked on the fire-box, an entirely sepa-

rate and distinct structure communicating with the barrel by three pipes—one for steam and two for water. But the new engines had the fire-box put into the boiler. To whom this splendid development of the original idea is due we cannot tell. The boiler of the engine sketched by Mr. Nasmyth is as great an improvement over that of the original Rocket as the boiler of the latter was over that of the Royal George or the Locomotion. Although Stephenson by no means wished to run the Rocket, a half-worn-out ballast engine, from Manchester to Liverpool, on the opening day, he did not wish that the name should be lost, and so a new Rocket was put on the road. There is a suggestive passage in Smiles' "Lives of the Engineers, George and Robert Stephenson," page 223 of the 1874 edition: "Eight locomotive engines constructed at the Stephenson Works had been delivered and placed upon the line, the whole of which had been tried and tested weeks before, with perfect success." This plainly implies that all the eight engines were new. Smiles is writing, he it is remembered, of the events of the 15th of September. There is not in this passage a shadow of foundation for believing that the Rocket of 1829 took part in the proceedings of the day. On the same page, further down, Smiles records the particulars of Huskisson's death. "Mr. Huskisson," says Smiles, "had alighted from the carriage, and was standing on the opposite road, along which the Rocket was observed rapidly coming up." Here we have the only mention made of the Rocket by Smiles in connection with the opening. Indeed, search in contemporary records has entirely failed to do more than

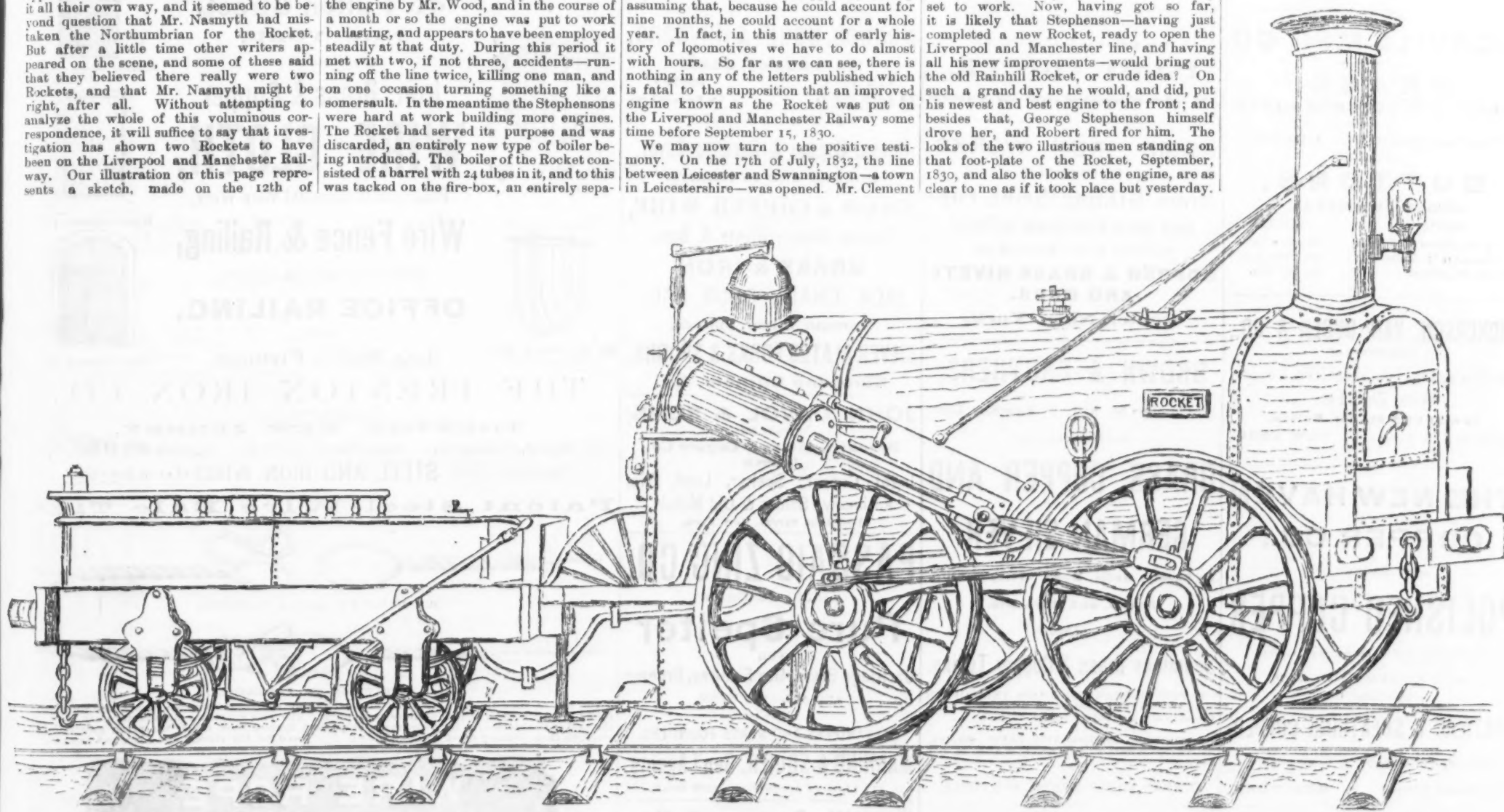
prove that an engine called the Rocket was present at the opening of the Liverpool and Manchester Railway, and ran over Mr. Huskisson. Several correspondents, however, insist that there was but one Rocket on the railway, and Mr. Isaac Watt Boulton has supplied several very interesting extracts from his father's diary bearing on the early history of the locomotive, which seem to support this view. There is, however, only an apparent inconsistency; and there is little doubt that there were two Rockets for some time at work on the line; and it is even doubtful if the second Rocket had any name plate on at the time Mr. Nasmyth sketched it. It must be remembered that events trod on each other's heels during the first two years of the life of the locomotive which immediately followed the Rainhill trials, and it was quite possible for a locomotive to work for two or three months on a line without the knowledge of every one concerned. Thus, the experience of an individual might apply to nine months only, and he would write that in 1830 a given event could not have happened, tacitly assuming that, because he could account for nine months, he could account for a whole year. In fact, in this matter of early history of locomotives we have to do almost with hours. So far as we can see, there is nothing in any of the letters published which is fatal to the supposition that an improved engine known as the Rocket was put on the Liverpool and Manchester Railway some time before September 15, 1830.

We may now turn to the positive testimony. On the 17th of July, 1832, the line between Leicester and Swannington—a town in Leicestershire—was opened. Mr. Clement

Rainhill in 1829, at the opening of the Liverpool and Manchester line in 1830, in the Stephenson Works in 1831, and on the Lincoln and Swannington Railway from 1832 to 1846, when he went back to Newcastle. This correspondent, writing over the signature, "An Old West-bridge Man," says in the letter referred to:

"Now, sir, I should just like to run over a bit of history, which, perhaps, may clear up this matter. You know that in the month of October, 1829, the first Rocket won the prize, and the line was not opened till September 15, 1830. Now, what were the Stephensons doing during that 11 months? Does any one think they were sitting still? No, indeed; both father and son were working, as if for their very lives, to perfect the locomotive. More real progress was made during that 11 months than in any one year before or since. Look at the old Rainhill Rocket, and at Mr. Nasmyth's 1830 Rocket. The one is a crude idea; the other is a finished locomotive; and all this improvement had been made in less than a year. It shows what the Stephensons could do if they set to work. Now, having got so far, it is likely that Stephenson—having just completed a new Rocket, ready to open the Liverpool and Manchester line, and having all his new improvements—would bring out the old Rainhill Rocket, or crude idea? On such a grand day he he would, and did, put his newest and best engine to the front; and besides that, George Stephenson himself drove her, and Robert fired for him. The looks of the two illustrious men standing on that foot-plate of the Rocket, September, 1830, and also the looks of the engine, are as clear to me as if it took place but yesterday."

be opened with three new engines—Phoenix, Samson and Goliath—but, as bad luck would have it, the boat with the Samson ran aground near Trent. Being thus short of an engine the Rocket was taken off ballasting and required for the opening trains. All Leicester knew that the Rocket was the ballast engine, so John Ellis and Robert Stephenson said, "Call her Comet," which was no sooner said than done. The passengers all praised the new Comet, as they called it, little knowing that it was the Rocket which they had seen ballasting for about four months. In December, 1835, the Rocket, then under the name of Comet, went to the London and Birmingham line to be a ballast engine; the Phoenix soon went to help to make the Gloucester line, and the Samson went on the Ibbstock branch; and in place of these we had the Vulcan and Atlas, two very fine six-wheeled coupled engines. I hope I have cleared up some of the difficulties, and, as I have only told you just what I saw and know, my account, rough as it is, may be relied upon."



THE ROCKET, 1832.—FAC-SIMILE OF A SKETCH MADE BY MR. W. STENSON, MARCH 12, 1832.

March, 1832, of the second Rocket, after it had undergone important alterations. This is the engine drawn by Mr. Nasmyth, but with the cylinders raised and a second pair of driving-wheels added. It will be advisable here to recapitulate certain facts which it is desirable should not be forgotten. So far as can be learned, the first railway ever used apart from a mine was the Surrey Railway, designed by Mr. Jessop, on which goods were hauled by horses between Croydon and Wandsworth. The second was the Stockton and Darlington Railway, opened on the 29th of September, 1825. In the first year its receipts increased from £700 to £1500 a month. Passengers were carried on it at 1d. a mile outside and 1½d. a mile inside. The price of coals, which used to be 15/ to 17/ a ton at Stockton, was reduced at once to 10/2 by the railway. As far back as 1822 the Liverpool and Manchester Railway was projected by Mr. William James. The surveys for it were made by Mr. Vignoles, but the opposition of the canal proprietors was so great that nothing was done until the financial success of the Stockton and Darlington Railway stimulated Liverpool and Manchester capitalists to renewed exertions. In the autumn of 1826 the new railway was begun by George Stephenson, who had been appointed by the company to carry out Mr. James's scheme. In October, 1829, there remained to be completed only 4 miles of the road out of 33—that is to say, all the heavy work was done; but not more than 14 miles of permanent way were laid. The rails were of the fish belled type, which, it may not be generally known, was invented and patented by a Mr. Birkinshaw. It will be found stated

rate and distinct structure communicating with the barrel by three pipes—one for steam and two for water. But the new engines had the fire-box put into the boiler. To whom this splendid development of the original idea is due we cannot tell. The boiler of the engine sketched by Mr. Nasmyth is as great an improvement over that of the original Rocket as the boiler of the latter was over that of the Royal George or the Locomotion.

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E. Stretton, of Leicester, writing on the 10th of last October, says: "Just now I see you wish to know what became of a second Rocket, 1830. Well, that point is soon cleared up, as the engine in question was taken back to Stephenson in 1831, had the cylinders raised, coupled wheels added and was sent to Leicester and ran the first train on July 17, 1832. I am not old enough to remember this, but I saw the fact in the old Swannington books, and it is generally known by men on the line."

This, says the *Engineer*, is very direct testimony from a gentleman competent to write with authority on the subject. But we have even better evidence than this. On the 12th of March, 1832, Mr. W. Stenson, of Leicester, made a drawing of the Rocket as she stood at the Fosse-lane siding, near Leicester. George and Robert Stephenson, S. S. Harris, John Ellis and his son, Edward Shipley and others were present. Mr. Stenson afterward made a tracing of the engine for his friend, Mr. Smith Harris, who gave it to a gentleman who has sent it to us for publication. He was present when Mr. Stenson made the sketch, and he states that after the engine ran on the Liverpool and Manchester Railway, and was there drawn by Mr. Nasmyth, it went back to Newcastle, the cylinders were raised, a large pair of trailing-wheels was put on and coupled, the safety-valve was put on the dome, a brake put on the tender, a headlight on the chimney and the chimney was shortened. There is reason to believe that this engine was afterward called the Comet. Further details of the history of this 1830 Rocket are supplied by a remarkable letter which appeared in the *Railway Review* of November 28, 1884. We are not at liberty to give the name of the writer, but may say that he was on the Stockton and Darlington line in 1825, at

I have seen Mr. Nasmyth's sketch in the *Engineer*, and I say it is true and exact; it certainly ought to be, as I well remember him and several others making drawings. Well, in a short time Stephenson made so many more improvements that even this 1830 Rocket was not up to the times; so she went back to Newcastle to be improved. Just now the men at the Newcastle Works were hard at it, almost night and day; yet they could not turn out engines fast enough for the demand. The Canterbury and Whitstable Company's manager wrote: "Our engine Invicta is broken down; send men at once; we are having to work with horses." The Liverpool and Manchester sent for five and the Darlington for seven new engines at once. Only those in the works at the time have any idea what a bother it was to keep the lines supplied. The Leicester and Swannington Company had ordered three new engines, to be named Phoenix, Samson, Goliath, to be ready for the opening, fixed for October, 1832; and, to the consternation of the works' manager at Newcastle, a letter came from Robert Stephenson, at West-bridge, saying, "Get engines ready, as this line will be opened July 17; John Ellis says if engines cannot be made, we will open the line with horses." What was to be done? The manager went into the shop, and all he could do for the Swannington Company was to send them the '1830 Rocket,' which had just been put in first-rate order, and was ready to return to the Liverpool and Manchester Line. So this 1830 Rocket was sent by boat to the Leicester and Swannington Railway. She was put on the line at the Fosse-lane siding, and, as Mr. Weatherburn says, did the ballasting. Well, the 17th of July arrived, and it had been publicly announced that the line would

Were it necessary to add further testimony we could supply it. We fancy, however, we have said enough to convince even the most sceptical that the Rainhill prize engine opened the Manchester and Birmingham Railway, and killed Mr. Huskisson, has no foundation in fact, and, thanks to Mr. Nasmyth, a remarkable engine has been rescued from obscurity. The question what the so-called Rocket in South Kensington really is remains for solution. We are strongly disposed to think that it has very few claims beyond its name-plate to the title. It is certainly a very curious fact, if it be a fact, that the old tender should have been preserved, if we bear in mind the vicissitudes through which the engine has passed. The probability is that the engine has been rebuilt from the remains of several old engines—a bit from one and a bit from another. Such remains are not hard to get even now. Mr. I. W. Boulton has probably 1000 tons of scrap of old locomotives, dating from about the year 1830 down.

New Competitor for the Seaboard Coal Trade.—The Norfolk and Western Railroad Company has within the past two years been arranging for the extensive development of the bituminous coal fields in Southwest Virginia. The company proposes entering into a lively competition for the trade now supplied by the Cumberland and Clearfield coals, both at home and abroad. It has constructed at Lambert's Point, Norfolk, Va., one of the largest and most improved coal piers at tidewater. It is 2800 feet in length, has a depth of water at low tide of 26 feet, and is equipped with 34 loading shuttles. Here vessels of the largest size and draft can be loaded with unusual dispatch.

* See the *Mechanics' Magazine* for October 17, 1829.

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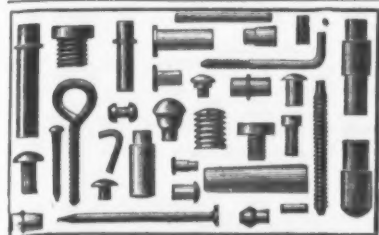


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Railway Foreclosures in 1884.

The record of railway foreclosure sales in the United States during 1884, says the Chicago Railway Age, shows that the harvest of bankruptcy sown during the disastrous times commencing some 10 years ago has now been nearly gathered. We find that during the year the number of roads thus sold, their mileage and the amount of capital represented were all much less than in any previous year since 1876, when our record began, and that they were nearly all of little importance, only one having a mileage of over 71 miles. The total number of railways sold under foreclosure in 1884 was 18. Total miles, 710; bonded debt, \$9,591,000; capital stock, \$13,913,000; total stock and debt, \$23,504,000. In these figures the debt does not include accrued interest or floating indebtedness, which would very greatly increase the obligations. In a few cases the amount of debt and capital stock has been partly estimated, where late figures had not been made public. It will be found that most of the roads in this list have been insolvent for some years, their final sale being simply the settlement of long existing trouble. The steady and rapid decrease in the number and amount of foreclosure sales during the past nine years is shown in the following recapitulation:

	No. of roads.	Mileage.	Capital stock and bonded debt.
1876.....	39	3,340	\$217,848,000
1877.....	54	5,875	198,048,000
1878.....	48	8,940	311,631,000
1879.....	65	4,900	243,288,000
1880.....	31	3,775	253,822,000
1881.....	29	3,617	127,933,000
1882.....	16	1,657	63,426,000
1883.....	18	1,354	47,000,000
1884.....	15	710	23,504,000

Total for nine years..... 306 23,858 \$1,490,950,000
The encouragement, however, which is derived from the fact of the decrease in the number of foreclosures is offset by an examination of the record of receiverships during the past year. Here we find evidence that seed had been sown for a new and luxuriant crop which will ere long begin to be harvested in the form of foreclosure sales. Our record of roads placed in the hands of receivers during the past 12 months shows 37 railways, having a mileage of 11,000 miles, with a bonded debt of \$107,000,000, not including other debts and past-due interest, and an apparent capital stock investment of over \$307,000,000, have failed and have been taken possession of by the courts. To this list might be added the Mexican, Oriental, Inter-oceanic and International Railroad Company (incorporated in this country with large capital stock) and the Newcastle Northern, and St. Louis and Western companies, which had expended much money in grading, although track had not yet been laid. These included would make the total number of companies placed in receivers' hands 40, according to our records, and would somewhat increase the capital and debt account above shown.

A series of experiments has been conducted at Spezzia, Italy, to ascertain the effects of torpedoes on a keel vessel of the type of the ironclad Italia. Her steel plates were displaced and bent, and the water entered her compartments, but she maintained her position. The result is regarded as showing that the effect of torpedoes is overrated, and that they are insufficient for the defense of ports.

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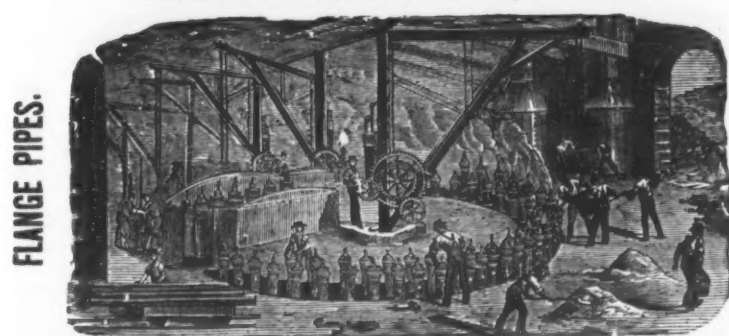
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PUMPS, HYDRAULIC RAMS, GARDEN ENGINES,

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Pumps and other Hydraulic Machines in the World.

FIG. 190. FIG. 191. FIG. 192.

Wrought Steel Sinks.

One of the strong points of these sinks is the new coupling with which they are now supplied and which is pronounced by all plumbers the best on the market. It is used with both lead and wrought-iron pipe; is a neat, reliable coupling, and is easily detached for the purpose of pumping out the pipe. The strainer and all parts of the coupling are tinned, and are furnished with all sinks without extra charge.

The fact of the great strength and durability of this sink, as it is practically free from danger of breakage in transportation, handling or use, is a strong point in its favor, and that its merits are recognized by most competent judges is evident from the fact that leading houses which have been interested in the common article have taken up the Wrought Steel Sink. Twenty-five per cent. is saved in freight by purchasing Steel Sinks. Orders come from all parts of the United States, Canada, Europe and Australia.

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Wooden Well Curbs, Wood Tubing,
Iron and Brass Pumps,
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Manufacturers of

SEAMLESS DRAWN BRASS & COPPER TUBES,

CUT NAILS, HORSE NAILS, FORGINGS, &c.

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The New Tariff Organization.

In accordance with the call issued, some 60 gentlemen met at the Astor House on Thursday, January 15, and organized the American Protective Tariff Association. Among those present were Henry S. Eckert, president of the Eastern Pig Iron Association; Henry Carey Baird, of Philadelphia; John Jarrett, of the American Tinned Plate Association, of Pittsburgh; Alfred Marshall, J. Wesley Pullman and William A. Ingham, all of Philadelphia; E. D. and E. A. Woodruff, of Auburn, N. Y.; George Danby, of the American Sheet Iron Company; Thomas W. Bethel, of Wilton, Conn.; P. S. Stetson, of the Leersport (Pa.) Iron Company; George Draper, of Milford, Mass.; Kenneth Robertson, of the Secaucus (N. J.) Iron Company; Oliver Williams, of Catasauqua, Pa.; Frank A. Flower, of Wisconsin; J. E. Thropp, of Philadelphia; Joseph D. Weeks, of Pittsburgh; John F. Quarles, secretary of the Eastern Iron Ore Association; William H. Ainey, of Pennsylvania; Thomas H. Moller, Henry T. Cook, W. J. Taylor and I. P. Pardee, of New Jersey; W. E. C. Cox, of Reading; George W. Russell, of Massachusetts; Frederick Prime, Jr., of Philadelphia; De B. Randolph Keim, of Washington, and E. H. Ammidown, Le Grand B. Cannon, A. R. Whitney, D. L. Einstein, George T. Mulford, E. P. Miller, W. M. Knight, Henry Merz, E. P. Williams, James M. Farr, E. M. Cook, Morris H. Budlong and Chester Griswold, all of New York, and Thomas H. Dudley, of New Jersey.

The meeting was called to order by Mr. Ingham, and Mr. Eckert was made temporary chairman. Mr. Eckert briefly announced the object of the gathering. "Its design," he said, "is to serve protection as a principle and in doing so to serve the labor interests of the country. We have no other purpose than that." Mr. Ingham stated that at a meeting of the Eastern Pig Iron Association, in November, the subject was broached of getting up a general tariff club combining all interests. A committee had then been appointed, of which he was chairman, and he had corresponded with leading men throughout the country and had reported to the next meeting that a general meeting should be called. The committee was directed to prepare the draft of a constitution, in which the new association to be formed was named "The American Tariff Club," and its object was declared to be "to promote the protection of American industry." He moved that a committee on permanent organization be appointed to name officers and present a plan of organization. The following committee was appointed: Messrs. Ingham, Flower, Russell, Thropp, Ammidown, Pardee, Cannon, Budlong and Dudley.

The constitution as reported by this committee, after some slight changes, was adopted. It provides that the name shall be "The American Protective Tariff Association," and that its objects shall be to secure and maintain protection to American labor and American industries. The third article makes every person who favors the objects of the association eligible to membership in it. The officers provided for are a president, a first vice-president, and a vice-president for each of the States and Territories, a secretary, treasurer, and two directors who shall, as far as possible, represent the different industries of the country. The initiation fee was fixed at \$1, and the annual dues after the first year at \$1, and provision was made for the admission of affiliated organizations consisting of 20 members or less upon the payment of \$5.

The Committee on Permanent Organization were prepared to present names for the various positions, but it was deemed best, in view of the necessity that the wisest choice be made, to postpone action for one month, and in the meantime the committee were instructed to select a list to be presented at a meeting to be held Thursday, February 12, 1885. Prior to adjournment Mr. Sharp moved that the association express its disapproval of the importation into this country of foreign pauper labor. This was carried by a unanimous vote.

The Manchester Works to be Sold.

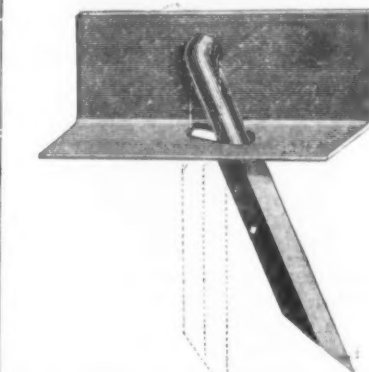
A writ of *seire facias* has been issued from the United States Circuit Court at the application of Knox & Reed, attorneys for Thomas Hillhouse, president of the Metropolitan Trust Company, of New York, trustee, on a mortgage executed by the Manchester Iron and Steel Company, of Pittsburgh, says the Pittsburgh Dispatch. The mortgage was executed July 1, 1882, to secure bonds that were issued for the payment of a debt of \$289,000, and provided that the debt should be paid in 30 years, with interest payable semi-annually. In case of default in the payment of any installment of interest on any of the bonds, or of any coupon, the entire principal was to become due. Mr. Hillhouse's petition alleges that there has been a default, and that holders of not less than one-fourth of the amount of bonds outstanding have requested him to enforce their rights under the mortgage.

This is the end of the struggle of the Manchester Iron and Steel Company to keep its head above water. The company was composed of Pittsburgh and New York men, and a few years ago the extensive works in Manchester were leased to A. Kloman, but no money was made out of it, and then the Pittsburgh members of the company endeavored to effect a long lease, which was practically a sale of the works and property. The New York parties interfered by equity proceedings in the United States Court here and the lease was prevented by injunction. The Pittsburgh members of the company were ousted, and the New Yorkers proceeded to borrow money and extend the works by the erection of a valuable and costly plant, hoping by infusing new life and energy into the business that it could be made to pay. To secure the borrowed money, amounting to about \$300,000, this mortgage was executed and bonds placed in the hands of creditors. The effort proved futile, and on account of the dullness in the iron trade the company made an assignment. Henry Stanton, of New York, as assignee,

ran the business and worked up all material and paid off three-fourths of the floating debt, but in the meantime the bondholders were getting nothing, and now, after the expensive plant had been idle for a long time, there being no attempt at resumption, they clamor for their money and have taken this step to procure a sale of the valuable property in the lower end of Allegheny upon which the mortgage that secures their bonds was placed.

Buford's Steel Smoothing Harrow.

The Rock Island Plow Company, of Rock Island, Ill., make a harrow known as Buford's steel smoothing harrow, the arrangement of the teeth of which is shown in the accompanying cut. The frame of this harrow is made of angle steel, supported by rods passing through cast-iron spools. By referring to the illustration it is seen that the teeth work in oblique slots, which are punched in the flange of the bars, so that by reversing the harrow it may be used either as a smoothing harrow

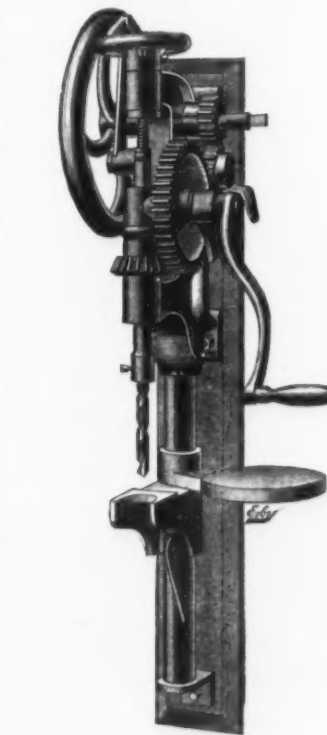


Tooth of Buford's Steel Smoothing Harrow.

or as a straight-tooth harrow. The harrows are made in sizes of 48, 60 and 72 teeth, the first two sizes being in two sections and the last in three sections. Instead of their diamond sloping-cut tooth, which is here shown, the Rock Island Plow Company furnish round steel teeth when desired, but recommend the diamond teeth as being more effective. These harrows will work in any kind of ground, and are claimed to be very simple, strong and durable.

The Bailey Drill.

The Illinois Iron and Bolt Company, of Carpentersville, Ill., are now putting on the market what is known as the Bailey drill, shown in the annexed cut. The entire spindle and feed-screw are made of steel, and the self-feed may be used or not, as desired, by simply dropping or raising the feed dog. It can also be easily changed to a slow or fast feed. The table can be fastened at any desired point by an improved cam. Through



The Bailey Drill.

an intermediate gear the balance-wheel may easily be disconnected, and by changing the crank from one shaft to another different speeds may be obtained. All parts of these drills are made interchangeable, and every drill is set in perfect line and tested before shipping.

The Colorado Coal and Iron Company.

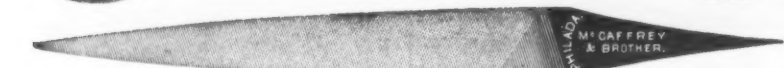
—During the past year the Colorado Coal and Iron Company's blast furnaces were in operation only about 10 months, and the product in pig iron was 15,836 tons of 2000 pounds. The pig iron was manufactured into castings, 653 tons; muck bar, 3100 tons of 2240 pounds; nails, 63,350 kegs of 100 pounds each; spikes, 1570 kegs of 150 pounds each; steel rails, 3598 tons of 2240 pounds each, and merchant-bar iron and mine rail, 2785 tons of 2000 pounds each. The steel-rail mill was in operation only about four and a half months. It was run only as orders for rails were received, but, owing to the depression in business, these orders were not sufficient to keep the mills running all the time. The company's pig-iron product for 1884 was only about 40 per cent. of that of 1883. This was undoubtedly due to the small demand, and also partly to the strike among the coal miners that occurred last fall.

Paris, 1878.

McCAFFREY & BRO.,

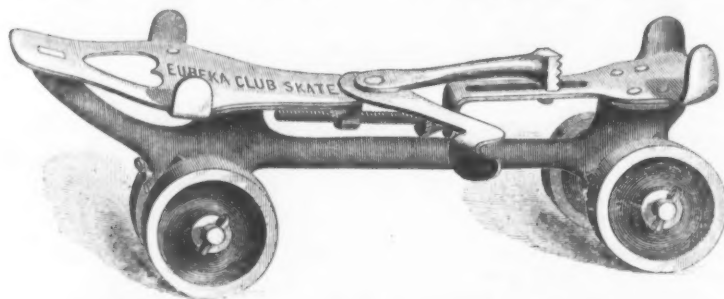
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Philadelphia, Pa., U. S.



Manufacture and keep in stock a full line of **FILES** and **RASPS** only, for which we claim special advantages over the ordinary goods, and ask domestic and foreign buyers to allow us to compete for their trade.

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The above cut represents the "EUREKA" Roller Skate, the **Most Complete** and **Most Perfect** in the Market. The clamp and foot-plates are made of Steel. **Simple, Durable and Easily Adjusted.**

When fastening this Skate to the shoe, the heel-clamps are stationary. The toe-clamps are drawn together, and the corrugated bar pressed back against the heel simultaneously by one motion of the lever, which is under the instep and cannot by any possibility be thrown out of position while skating, making a most perfect and secure adjustment to the shoe.

LIST, \$7.00. SPECIAL DISCOUNT TO THE TRADE.

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LIGHTNING HAY KNIVES. WEYMOUTH'S PATENT.

This knife is the best in use for cutting down hay and straw in mow and stack, cutting fine feed from bale, cutting corn stalks for feed, cutting peat and ditching marshes.

The blade is best cast steel, spring temper, easily sharpened, and giving universal satisfaction. A few moments' trial will show its merits, and parties once using it are unwilling to do without it. Its sales are fast increasing for export as well as home trade, and it seems destined to take the place of all other Hay Knives.

They are nicely packed in boxes, one dozen each of 30 pounds weight, suitable for shipping by land or water to any part of the world.

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For sale by the Hardware trade generally.

CAUTION:

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The characteristic feature of the invention is a curved blade, provided with saw-tooth cutters, and furnished with suitable working handles. It is our purpose to prosecute all infringers of our patent, and we have already commenced one suit, which is nearly ready for hearing, and are about commencing suits against other parties.

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Hand Equaling,
Handsaw Blunt,
Handsaw (Double-End),
Handsaw Taper, single-cut,
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High Back,
Hook-Tooth,
Knife,
Knife Blunt,
Lead Float,
Lightning,
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Mill,
Mill Blunt,
Mill Pointing,
Pillar,
Pitsaw,
Reaper,
Roller,
Round,
Round Blunt,
Slotting,
Slim Handsaw Taper,
Square,
Square Blunt,
Square Equaling Files,
Stave Saw,
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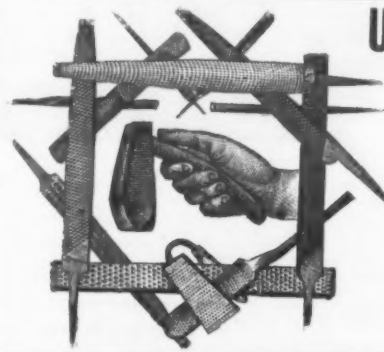
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BUTCHERS' KNIVES,
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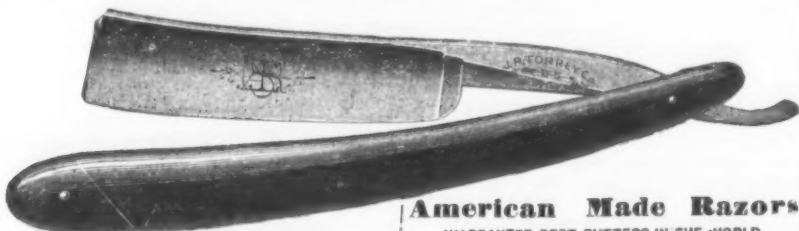
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AUSTRALIAN & OTHER
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"WHEREAS, I, GEORGE A. ROBINSON, of West Mansfield, County of Bristol, State of Massachusetts, have heretofore manufactured and sold certain Knives bearing a Mark which is claimed to be an imitation of the trade-mark owned by John Wilson, of Sheffield, England, which consists of four peppercorns and a diamond, under the mistaken belief that I had the right to do so.
NOW, This, is to Witness, that, in consideration of the forbearance of the Representatives of the said John Wilson to sue me for damages for the wrong aforesaid, I do hereby undertake and agree,
FIRST, to surrender and deliver to the Attorneys for the said John Wilson, all knives now on hand, and in my possession, or under my control, bearing the said imitation trade-mark, and
SECOND, I further undertake and agree to and with the said John Wilson, and his legal representatives, not to manufacture or sell, or cause to be manufactured or sold, at any time in the future, Knives or other Cutlery, bearing his trade-mark aforesaid, or any imitation or simulation thereof. IN WITNESS WHEREOF, I have hereunto set my hand and seal at West Mansfield, aforesaid, this thirty-first day of May, 1883.

Witness—
E. M. REED,
(Attorney for Defendant.)

G. A. ROBINSON, (L.S.)
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The Sugar Makers' First Choice.

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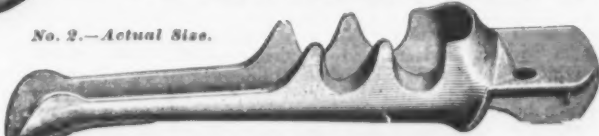
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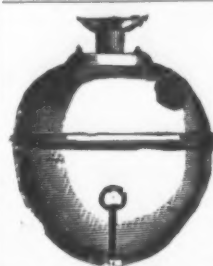
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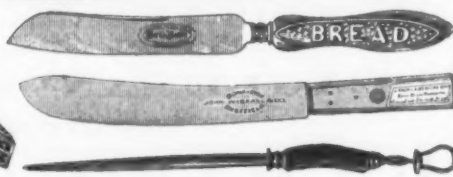
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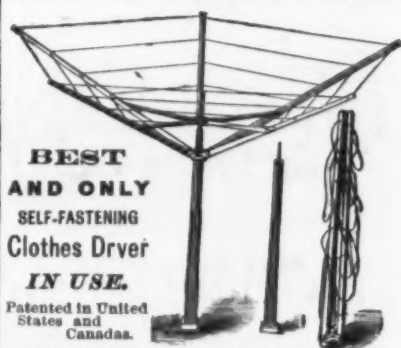
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The backstrain when the wrench is used is borne by the bar—not by the handle. The strongest Wrench made, and the only successful Re-enforced Bar. None genuine unless stamped

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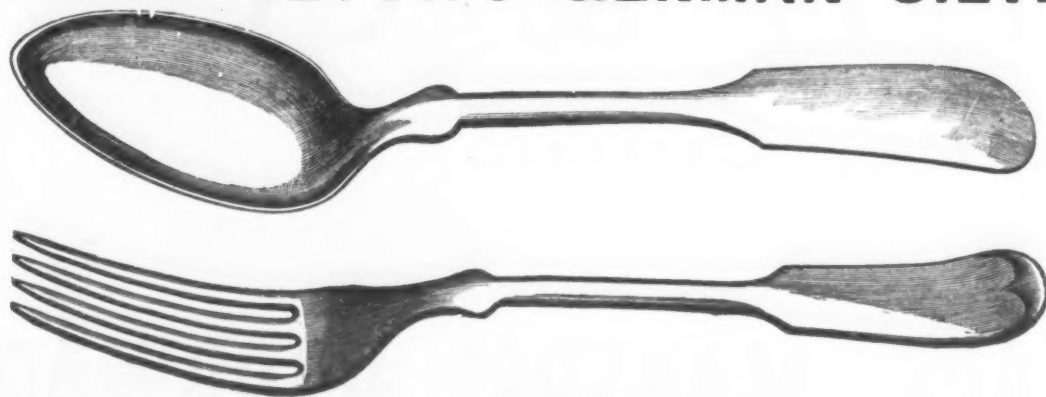
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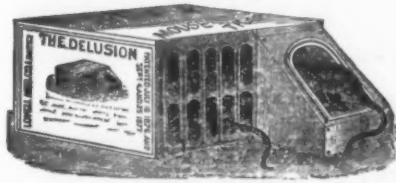


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More merit with less complication; more work with less annoyance; will plow harder ground with less draft than any plow on or off wheels. No pole required (except in stumpy fields). Side draft and neck weight impossible. Has no equal on side hills. Holds a straight furrow without driving. The strongest, simplest and best-made Plow in market. Address

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P.S.—The dealer selling the "Solid Comfort" need not spend his profit "doctoring" it. It is easier adjusted than a hand plow.

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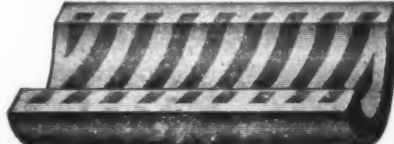
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BEST BARB FENCE IN THE WORLD.

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"DECIDEDLY THE BEST IN THE MARKET."

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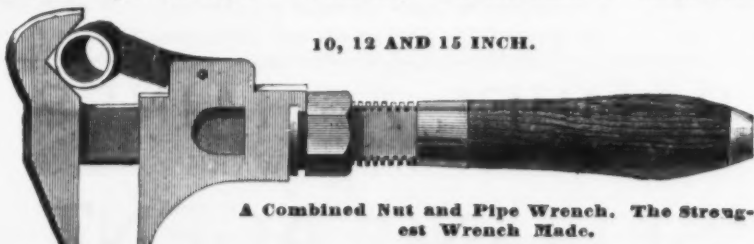
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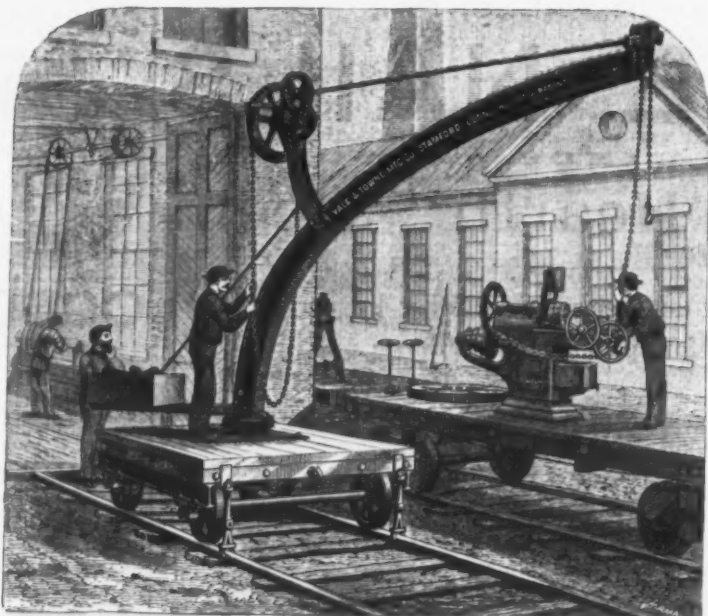
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In asking for Estimates, give capacity, height of hoist and effective radius required, also gauge of track.

Load Always Self-Sustained.

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General Crane Catalogue Mailed on Application.

Reissues of Patents.

The subjoined dissenting opinion of Mr. Justice Miller in the recent case of *Maha vs. Harwood* and others, on appeal from the Circuit Court of the United States for the District of Massachusetts, will be read with interest as furnishing the first public intimation that the United States Supreme Court is not unanimous in holding the views concerning reissued patents which were enunciated in the decision of January 9, 1884, in the case of *Miller vs. the Bridgeport Brass Company*, a decision which wiped out of existence great amounts of capital invested in reissued patents upon faith in the doctrine, previously held by the Supreme Court, that a patentee was entitled, in a reissue, to claims coextensive with his invention. Mr. Justice Miller said:

In this case I avail myself of the first occasion which has fairly required it to give expression to my views in opposition to those expressed by the court in several cases in which reissues of patents have been held invalid.

The principle on which the present case is decided, and which, if not the only ground of that decision, is emphasized in the opinion as the controlling ground, is that of laches in the application for the reissue. It is quite clear from the opinion that, if in all other respects the patentee had been entitled to the reissue of the patent on which he relies in this case, it would give him no protection, because this court is of opinion that, under the circumstances, the application for it came too late.

This proposition of the court does not grow out of any statute of limitation governing such application, nor because the original patent, and, of course, the reissue, does not have a considerable time to run before it expires by law, but because the court, applying to the transaction as it came before the commissioner of patents, the equitable doctrine of laches—of improper delay—holds that, on that principle, the party came too late and the reissue is invalid. The distinction between the instrument being void and merely voidable is so well known that it can hardly be supposed to have escaped the attention of the court, and, since the judgment in this case can bind no one but the parties to it, the patentee in another suit on the same patent against another party, by showing reasonable excuse for his delay, may prove his patent to be valid, and in that suit he must recover, though he fails in this.

Thus every infringer will have the right to retry, when he is sued, the question of whether the commissioner of patents exercised a sound discretion in allowing the surrender and reissue of the patent. Such a doctrine renders the labors of the Patent Office, with its commissioner and corps of trained examiners, of very little value, and subjects the final decision in favor of a patentee to the re-examination of any number of juries on the very facts which were passed upon by the officers appointed by law for the purpose of deciding the questions necessary to the validity of the patent. The doctrine is well established that a grant by the Government, within its lawful authority, evidenced by a patent under its seal and the signature of the Executive, cannot be impeached collaterally. It must be recognized as valid in all courts when it is introduced as evidence of the right which it confers, and can only be avoided by a direct proceeding by way of *scire facias*, or bill in chancery, to set aside the grant for some of the reasons which made its original issue a wrongful act. In such case the Government which issued the patent, by its attorney-general or other proper officer, in a court of competent jurisdiction, obtains a decree setting the patent aside, whereby it is rendered of no avail against all persons interested in the matter, as well as the Government.

For decisions which establish this doctrine, if there could be any doubt about it, I refer to the following cases: *United States vs. Stone*, 2 Wall., 525; *Same vs. Throckmorton*, 98 U. S. R., 701; *Mowry vs. Whitney*, 14 Wall., 434, which is the case of a patent for invention and where the whole subject is fully discussed.

Undoubtedly there are cases of patents, with all the solemn formalities attesting their validity, which are properly rejected by the courts when offered in evidence, because they show upon their face that no authority existed for their issue. The power to grant the rights which they profess to confer did not exist. Either it did not exist at all or it did not exist in the officers or tribunal which issued the patent. In such cases the court can see, from the face of the instrument, the nature of the grant and the power which the law confers on the officer who issued it, that it is wholly void, and that no evidence to be now produced or which could have been produced before that officer could authorize the grant or make it valid. Such an instrument is void *ab initio*, is void always and everywhere for want of power in those who made it.

Can the present case come under this exception?

Clearly not. The question of laches, of undue delay in making application to correct "a mistake, accident or inadvertence," by reason of which the patentee does not get the full benefit of his invention, must depend on many circumstances which cannot appear on the face of the reissued patent. No mistake can be corrected until it is discovered. The period of this discovery is always a matter of proof, which may be of the most varied character. If the discovery of the mistake was soon after the issue of the patent, and the delay defeated the right to the reissue, this was a matter into which the Patent Office should inquire. The duty to do so devolved on it, and the right to decide it necessarily followed. While the dates of the original patent and of the application of a reissue might seem to show an unreasonable delay, this appearance might have been removed by evidence which afforded a full justification for it. Very long delays have been justified by the decisions of this court when set up as objections to patents. See *Smith vs. Goodyear Dental Vulcanite Company*, 93 U. S. R. 486.

That patents for inventions were intended by Congress to have this conclusive and unimpeachable character is manifest from the legislation on this very point. Section

4920 of the Revised Statutes, which was originally enacted in 1836, sets forth five distinct defenses which may be pleaded to an action for infringement of a patent right. They are as follows:

1. That, for the purpose of deceiving the public, the description and specification filed by the patentee in the Patent Office was made to contain less than the whole truth relative to his invention or discovery, or more than is necessary to produce the desired effect; or,

2. That he had surreptitiously or unjustly obtained the patent for that which was in fact invented by another, who was using reasonable diligence in adapting or perfecting the same; or,

3. That it had been patented or described in some printed publication prior to his supposed invention or discovery thereof; or,

4. That he was not the original and first inventor or discoverer of any material and substantial part of the thing patented; or,

5. That it had been in public use or on sale in this country for more than two years before his application for a patent, or had been abandoned to the public."

The statute also requires the defendant in such cases to give the patentee notice with great particularity of the persons who are prior inventors or have knowledge of prior use of the invention, and when and by whom it has been used.

It will be observed that, while these defenses go to the validity of the patent, they all resolve themselves into want of novelty or of priority of invention or discovery, except the first and the last.

Neither laches nor fraud is here mentioned as a defense to the patent. Why were these five points made matter of defense by statute? And why were no others mentioned? The answers to these two questions are obvious, and they are conclusive of the question before us.

The answer to the first question is that these defenses go to impeach the patent and destroy its value as evidence in that case, and by the law as it stood then and stands now this cannot be done without a special statute to authorize it.

And the reason why no other grounds for impeaching the patent were allowed to be set up in defense was that Congress intended that all other causes for impeaching the patent should be prosecuted in the usual mode of *scire facias*, or bill in chancery, brought by the proper law officers of the Government to set it aside and annul it.

If Congress had intended that the patent issued with all the necessary formalities should be assailed collaterally for every reason that might have been urged against its issue originally, it would have said so in short terms, and not have enumerated particular or special reasons for which it may be so attacked.

That laches is not one of these reasons is clear, and affords an unanswerable argument that it was not intended that it should be a ground of defense for its infringement in such actions.

The careful and studied enumeration of matters going to impeach the patent, where a suit is brought to enforce rights granted by it, is the strongest affirmation that no others are admissible for that purpose in that kind of suit.

In the *United States vs. Throckmorton* the court said that, "in so important a matter as impeaching the grants of the Government under its seal, its highest law officer should be consulted, and should give the support of his name and authority to the suit."

In *Mowry vs. Whitney*, 14 Wall., 441, it is said that a suit by an individual could only be conclusive in result as between the parties, and would leave the instrument valid as to all others, and the patentee might be subjected to innumerable vexatious suits to set aside his patent. "It would seriously impair the value of the title which the Government grants, after regular proceedings before officers appointed for the purpose, if the validity of the instrument by which the grant is made can be impeached by any one whose interests may be affected by it, and would tend to discredit the authority of Government in such matters."

If the principles of the opinion in the present case are sound, then in every case where an action at law is brought the jury must sit in judgment on the action of the commissioner of patents as to the existence of laches where that is alleged, and as there may be a dozen jury trials in suits against that many different parties for infringing the same patent, each jury deciding on its own impression of the evidence before it, the question of the validity of the reissue can never be settled nor the patentee nor the public know whether his patent is valid or worthless.

Such a departure from the settled rules of law, as applicable to these instruments, cannot be justified in a court until authorized by legislative power.

In several cases which have preceded this one, especially *Miller vs. the Brass Company*, 104 U. S. R., 350, where this doctrine has been stated in the opinion, other grounds were also given as the foundation of the judgment. I had hoped, when we came to a case where the question must be decided, my brethren would not adopt it on full consideration. This must be my apology for any apparent acquiescence in it heretofore. I am of opinion that reissued patents are entitled to the same consideration as other patents issued by the Government.

The grain carrying trade of the port of New York has been almost wholly lost to the American flag. No longer ago than 1879 we had in the trade 1793 sailing vessels, or nearly two to one compared with the number of steamers, but in the year 1884 only two of the entire fleet remained. The quantity of grain exported last year was 45,393,789 bushels carried by 1120 steamers and 101 sailing vessels of various nationalities. Of the steamers more than half were British, and the sailing vessels were principally Italian, Austrian and Portuguese.

The Peruvian Government has determined to adopt a strongly protective tariff, and has already raised the import duty on beer, cigars, rice, soap, boots and shoes and other articles which are or can be manufactured in the country.

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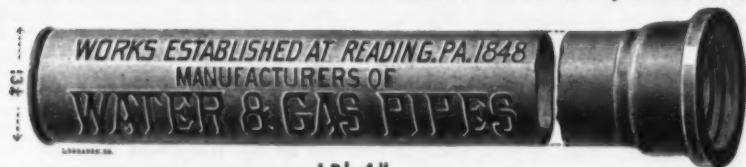
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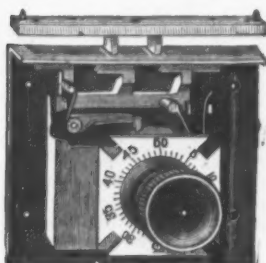
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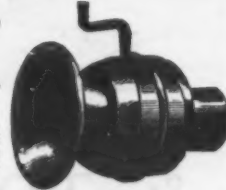


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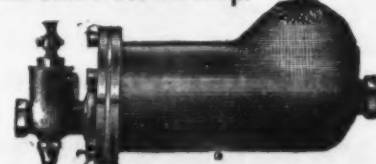
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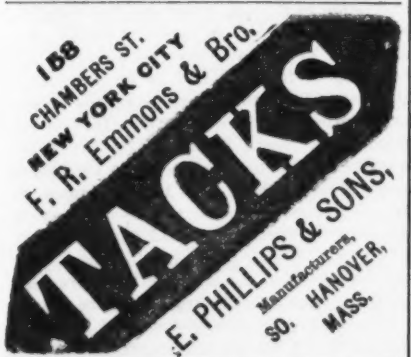
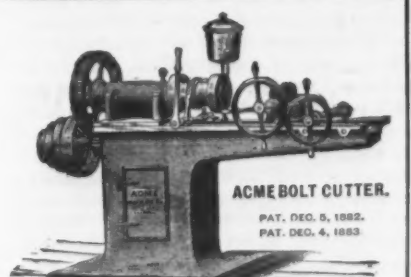
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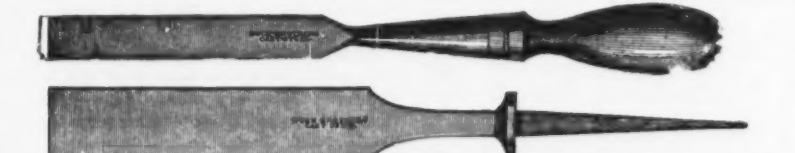
Pat. 11,308, 213,601.

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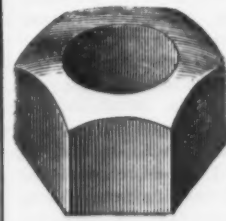
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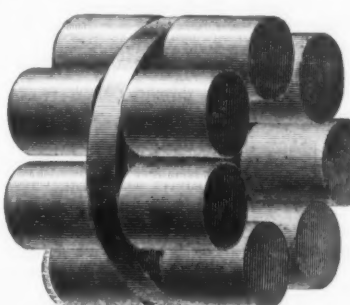
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metal railway sleepers have of late attracted,
it may be of interest to state that they were
first thought of in France by M. Vautherin,
but soon subsided into oblivion. In Ger-
many, on the contrary, the idea has been
followed up since 1867, when, in the wake of
the second Paris International Exhibition,
the Bergisch Märkische Railway Company
had 664 iron sleepers laid down between
the stations of Schlabbusch and Mulheimam-
Rhein. These sleepers were 7 feet 2 inches
long, weighed 5 cwt. 8 pounds, and were
laid at a distance of 2 feet from one an-
other.Vautherin's sleeper was soon given up,
because it was found that the joint between
the rail and the sleeper was not tight enough,
and, consequently, the railway gauge would
undergo an undue expansion. In 1874 the
experiment was taken up again in the Ruhr
Valley, on the metals of the same company,
between the stations of Schwerte and
Wickede. As many as 25,000 rather thicker
sleepers were laid down in the central part,
so as to improve the joint between rail and
sleeper. This plant has now been laid
for well-nigh 10 years, and yet most of
the original sleepers are still in their
places. It is true that similar defects,
though in a lesser degree than in the case
previously mentioned, showed themselves in
this instance. There were slits in the sleep-
ers and defects in the joints; nevertheless,
it may be said that the experiments, on the
whole, proved successful.In 1877 a new and stronger form of metal
sleeper was introduced, and a piece of T-iron
was riveted underneath, at the joint where

Anti-Friction Journal Bearings.—Figs. 1. and 2.—Perspective Views.

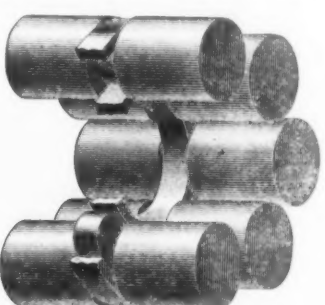
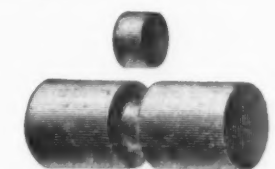
the rail is laid down, for the purpose of pre-
venting the sleeper from being flattened.
This method proved a failure, and had to be
given up. A piece of angle iron was then
riveted against the upper flange, correspond-
ing exactly to the hollow at the point where
the rail rests on the sleeper. In order to
keep the ballast in its proper place, to keep
it perfectly tight and prevent all derange-
ments in the metals while the trains pass
over them, it became necessary to do away
with the two flanges and substitute two ver-
tical plates for them.In Germany the use of soft steel has chiefly
contributed to the use of metallic sleepers.
This kind of steel possesses a great power of
resistance and a greater faculty of overcom-
ing the strains to which sleepers are exposed.
Of late years the basic system of steel-mak-
ing has enabled manufacturers to supply
large quantities of this metal at very cheap
rates. Sufficient time has now elapsed to
admit of judging the merits and demerits of
the new description of plant. Herr Jung-
becker, permanent-way engineer of the
Bergisch Märkische Railway, remarks that
metallic sleepers must not be of complicated
section and must be easy to mill. It ought to
be easy to finish them right away, without
any costly process, just as they come out of
the rolling mill.The actual cost of metal sleepers cannot
be much in excess of the expense incurred in
placing rails on wooden sleepers. Although
the original outlay required for the former
is much greater, it is soon made up for by
their greater durability. It must not be for-
gotten that the cost of the laying and relaying
of wooden sleepers represents in the main-
tenance of railways an item almost equal to
the original outlay for the sleepers them-
selves, even without taking into account the
inconvenience of having to break up the line
every now and then. Supposing an old steel
sleeper to cost five times as much as an old
wooden one, and a new steel sleeper to cost
double, there would yet be a clear gain of 25
per cent. in laying down a purely metallic
plant.**Harvests are Not Panaceas for All Ills.**The Boston Commercial Bulletin contains
the following excellent article on the rela-
tions of agriculture and manufactures:In the excellent review of the iron trade
for 1884 by Secretary James M. Swank, of
the American Iron and Steel Association, he
says: "The country at large cannot be
prosperous if the farmers are not." Without
dissenting from that position, we should say
the occurrences of 1884 pointed still more
emphatically to the conclusion that the farm-
ers cannot be prosperous if the country at
large is not. An old farmer up in one of
the hill towns of Hampshire County took the
writer down into his cellar and showed him
bins upon bins heaped with golden apples,
the products of his orchard. Upon being
congratulated upon his abundant crop, he
replied: "Yes, I've got apples enough, but
what I want is a market for them." The
same reply could be aptly made just now by
the farmers of the West.The corn crop of 1884 consisted of 1,800,
000,000 bushels, and was never before
equalled; the wheat harvest was an abun-
dant one, thus far estimated at 500,000,000
bushels, and the cotton crop is expected to
foot up 6,000,000 bales, an amount which has
but once before been equalled. The harvests
of the United States in 1884 were very large,
and yet a great amount of business depression
existed, and manufacturers, mill operatives
and all others who are engaged in our great
mechanic arts and industries will be some-
what excusable if they make frequent and
pointed mention of these facts.Secretary Swank, as the representative of
a great manufacturing industry, does thehandsome thing in recognizing the impor-
tance of our agricultural interests in his
annual review. But a due appreciation of
the co-ordinate value of other interests
should be rubbed into the minds of the
grangers and of their pretended friends who
have tried to belittle our manufacturing in-
dustries by assuming that prosperity always
comes with abundant crops.Nine-tenths of the agricultural products
of the United States are consumed in our
own country, and when the mills are run-
ning light and wages low, the farmers have
an appreciable hint of the fact. The world's
prices of corn and wheat and provisions are
not made in England but in Chicago. Let
the granger newspapers be careful in the
future, then, in talking about our abundant
harvests as though they were panaceas for
all ills. The condition of our manufacturing
interests is as important a consideration.**Anti-Friction Journal Bearings.**The anti-friction journal bearing shown in
the accompanying engravings combines some
valuable improvements for overcoming fric-
tion. It has been put to severe test in the
past three years, and in every case, we
understand, has given entire satisfaction.
The construction of these bearing is prac-
tically the same in all its applications, and
needs little description, as will be seen by
reference to the illustrations. The journal
is surrounded by a series of cylindrical roll-
ers, nearly as long as the bearing in which
they are placed. At the centers of their
lengths the rollers are reduced in size, form-
ing necks, the object of which is to retain a
proper position another series of anti-fric-tion rollers which are placed between the
necks to prevent the surface of the bearing
rollers from coming in contact with each
other.It should be observed that the diameter of
the separator rolls is less than the diameter
of the body of the bearing rollers, but
greater than that of the necks; by this ar-
rangement the circular retaining bands,
which are placed both inside and outside of
the roller necks, in order to retain all the
parts in proper position around the shaft,
are supported entirely on the separator rolls,
and do not come in contact either with the
necks of the rollers or the inside of the
hub, but only on the separating rolls. Where
the bearings cannot be put on the shaft from
the end, the retaining bands are hinged. It
will thus be seen that four independent roll-
ing motions are secured, and that at every
point at which any weight or pressure is
applied a rolling contact is provided.Experiments seem to have demonstrated
that the weight on the shaft is always dis-
tributed over at least three rollers; also
that the pressure on the rollers is always

Fig. 3.—Bearing and Separator Rolls.

directly toward the center of the shaft or
axle; consequently, the weight of the load
does not tend to crowd the rollers together,
and the separate rolls and bands are not
liable to wear.The manufacturers claim that there is a
great saving of power in using these bear-
ings; that they will run without oil at a
high rate of speed, and that their desirability
has been tested on the heaviest work. The
rolls can be made from 1/8 inch in diameter
up to the largest size, and, in any place
where steel will not answer, hard brass may
be used.The bearings are turned out by the Chap-
lin Manufacturing Company, of Hartford,
Conn.Messrs. James B. Scott & Co., of 122
Second avenue, Pittsburgh, appreciating
the advantages of a good article, posi-
tively guaranteed, have issued a neat card
in which they call attention to the fact
that their "Crown Brand" of sheet iron
is guaranteed in five particulars. These
briefly stated, are as follows: All gauges in-
cluding Number 20 and lighter are guar-
anteed to double-seam. The iron is guar-
anteed to be cold-rolled and smooth
on both sides. It is further guaranteed
to be cleaned and pickled, and therefore
free from scale. It is also guaranteed to be
flat, and without buckle, and lastly to be
carefully trimmed, with all edges cut square.
It would seem that these very specific guar-
antees cover about all that any reasonable sheet-
iron consumer can demand with reference
to the material he purchases. Assuming that
the iron is correctly branded with respect to
gauge, there seems to be nothing left to be
desired. In addition to these particulars a
table of the sizes regularly carried in stock
is contained in the card referred to, and the
statement is made that special sizes and
gauges can be furnished to order on short
notice. It is also stated that the "Crown
Brand" of sheet iron, although of such
excellent quality as above recited, is yet
sold at substantially the same figures as
cold-rolled refined iron.

The Iron Age

AND

Metallurgical Review.

New York, Thursday, January 22, 1885.

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JAMES C. BAYLES, Editor.
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Salesmen With Unlimited Powers.

Our attention has very frequently been called to the reprehensible practices of many traveling salesmen in "slashing" prices. It may be necessary in times of depressed trade to reduce prices in order to meet the changing conditions of business. A downward tendency of prices at such a time is apparently inevitable, and the article or material which is maintained at a disproportionate cost will either be very sparingly called for or else a substitute will be brought into requisition at a lower value. A gradual settling of prices is consequently so natural that all attempts to prevent it are futile. This has been very plainly shown in the course of the pig-iron trade. Ever since the depression in business set in, pig-iron manufacturers have had their trade well in hand, restricting production voluntarily whenever necessary, and preventing accumulation of stocks, in the hope of being able to maintain prices, but all to no purpose, as rates have steadily declined, in accord with prevailing conditions. It is also true in the case of coal, which is being sold at much lower rates than a year ago, notwithstanding the persistent efforts of the mining companies to restrict production and to control prices. But while the natural tendency of values is thus recognized to be downward during a period of depression, the fact remains that traveling salesmen are in too many cases accelerating the decline. They not only cut prices, but very frequently "slash" them unmercifully.

It is time that the attention of manufacturers and jobbers was drawn to the reckless manner in which orders are frequently being taken. Profits are now at a minimum, and indeed in many lines no profit whatever is being realized. Yet it is often difficult to

believe this to be the case when we hear at what rates some sales have recently been made. We do not now refer to financial sales, negotiated for the purpose of securing immediate pecuniary relief, but to sales made in a regular way by salesmen representing houses against whose standing not a shadow of suspicion has ever been cast. It seems absurd to call such a method of selling "making concessions." As usually understood, concessions cover a slight discount or a small reduction in price, or perhaps the payment of freight to a point near the location of the buyer. But some transactions which have recently come to light surpass anything in the way of concessions that we have been accustomed to meet. For instance, pig iron has been sold at points in New England by some parties at \$2 a ton less than was asked for competing brands. Even if the iron offered were a totally new brand, never before seen in that locality, and great difficulty was experienced in getting consumers to try it, this "slashing" of prices was most extraordinary, and, in the estimation of prominent merchants, reflects severely on the business sagacity of those who effected the sales. Now, were the salesmen who established these rates authorized to sell so low? Previous prices ruling in that locality evidently tempted the manufacturers of the new brands to make an effort to secure part of the market. It is not likely that they expected to be obliged to take \$2 below the quotations of their competitors.

Various occurrences of similar character are reported to us as happening in the manufactured-iron trade. Bars, plates and sheets have fallen under the influence of the "slasher" at various points. Even the steel trade is not free from the evil results of conferring unlimited powers upon traveling salesmen. Possibly instances of greater recklessness in making prices can be given for the steel trade than the iron trade. One that has just come under our observation is a case in which a salesman of American steel entered the lists against an English competitor for some trade which had up to that time been in the exclusive enjoyment of foreign steel makers. The price paid for the foreign steel was 20 cents per pound. Did the American salesman capture this trade by offering his steel, for say, 15 cents? That would have been quite a reduction to the consumer, and it is a reasonable presumption that it should have been sufficient to secure the order. But the enterprising salesman was evidently determined to obtain this particular trade beyond a peradventure, and he made his price 7 cents per pound! Practical steel-makers and merchants see an inevitable loss in this transaction if the steel furnished is of equal quality with the foreign 20-cent steel, and they see further trouble in the demoralization of prices in this and other lines by the establishment of such an exceptionally low price for a high grade.

Members of the iron and steel trades, and by no means old members, have a vivid recollection of a large steel establishment which once was distinguished for its reckless salesmen. They evidently possessed unlimited power over prices, and they circulated freely among steel consumers, "slashing" in every direction. Their sales were large, and the steel works continually expanded to meet the demand upon its capacity, and for a time it seemed destined to become the greatest establishment in this branch of trade, but its owners finally found it impossible to borrow any more money, and a huge collapse followed, extinguishing the concern totally. At present there are probably no works in the same condition, but manufacturers need to keep a closer supervision over those who represent them among buyers, or they may suddenly find themselves among breakers, without hope of rescue.

The American Society of Mechanical Engineers have issued a circular which refers to a very important question. The management of the Patent Office Department at Washington has of late repeatedly called forth harsh criticism from many different sources, and deservedly so. The inventors of this country constitute so large a body, and aid so materially in our industrial advance, that every facility should be afforded them in the attainment of their patent rights. That the present facilities possessed by the Patent Office are totally inadequate for the transaction of the enormous business which annually crowds upon the department needs no argument further than is furnished by every patent specification of recent date. Referring to them it will be noticed that in each and every instance the time elapsed between the date of application and the issuance of the specification is from six months to a year, and this delay must continue unless measures are taken for relief. The inefficiency of this department, as indicated in the circular referred to, is not due to the incompetency of its head, but to the action, or rather inaction, of Congress, which allows the funds of the department to be diverted from their legitimate purpose, and the Patent Office building to become so crowded as to most seriously interfere with the proper course of business. An excellent suggestion in the circular is that advocating an increase in the salary of the commissioner of patents, so that the office may command the best talent, for if the chief executive of the department be of superior ability, many of the lesser difficulties will disappear. Unfortunately, inventors as a class have not that organiza-

tion possessed by manufacturers and others which is so essential to the successful promotion of their interests in Congress. It is to be hoped, however, that the merits of their case will soon be recognized by the passage of some bill for the relief of the overworked Patent Office Department.

Condition of the Blast Furnaces of the United States January 1, 1885.

In another column we give our usual quarterly report of the condition of the blast furnaces of the United States. It should be noted that in this report we have stricken from the list of furnaces quite a number that recent investigations have shown to be abandoned or practically out of existence. In our October report the total number of furnaces was as follows:

Charcoal.....	248
Anthracite.....	230
Bituminous.....	226
Total.....	704

In the present report the numbers are:

Charcoal.....	331
Anthracite.....	225
Bituminous.....	234
Total.....	690

A reduction of 24 stacks. Of these 24 there are 17 charcoal, 5 anthracite and 2 bituminous. We shall have more to say in a future issue on this subject. It is only necessary to state here that this permanent reduction in the number of furnaces affects chiefly the number and capacity out of blast, and that the better comparisons between the tables of January 1 and previous dates will be with the figures "in blast."

In a condensed form the table for January 1, 1885, presents the following results:

Fuel.	In blast.		Out of blast.	
	No.	Weekly capacity.	No.	Weekly capacity.
Charcoal.....	68	8,371	159	15,941
Anthracite.....	86	21,594	125	28,500
Bituminous.....	82	35,812	141	55,812
Total.....	236	66,747	425	100,253

This report as to number of furnaces in blast is very nearly the same as October 1, when 69 charcoal, 86 anthracite and 79 bituminous furnaces, a total of 234, were in blast. On the 1st of December 88 anthracite were in blast and 93 bituminous, showing that there has been somewhat of a reduction in the month of December. The reduction is chiefly at Pittsburgh.

The following table shows the condition of the furnaces at the beginning of each quarter last year and the 1st of January this year:

Fuel.	In blast.		Out of blast.	
	No.	Weekly capacity.	No.	Weekly capacity.
Jan. 1. Charcoal.....	78	8,935	169	16,008
Anthracite.....	109	28,824	122	25,555
Bituminous.....	101	45,355	123	41,907
Total.....	288	83,225	414	83,580
April 1. Charcoal.....	62	8,713	155	16,654
Anthracite.....	107	27,612	121	26,005
Bituminous.....	100	40,326	126	39,420
Total.....	269	85,561	432	82,079
July 1. Charcoal.....	80	10,280	167	14,725
Anthracite.....	101	25,949	120	25,785
Bituminous.....	98	47,630	127	44,211
Total.....	279	84,859	414	87,701
Oct. 1. Charcoal.....	69	8,679	175	16,318
Anthracite.....	86	25,539	141	32,460
Bituminous.....	79	40,410	146	52,136
Total.....	234	74,628	462	100,914
Jan. 1. Charcoal.....	68	8,371	159	15,941
Anthracite.....	86	21,594	125	28,500
Bituminous.....	82	35,812	141	55,812
Total.....	236	66,747	425	100,253

This shows a reduction of 52 furnaces "in blast" in the year, of which 10 were charcoal, 23 anthracite and 19 bituminous.

The relative condition of the blast-furnace industry for the past seven years is shown in the following condensed table of furnaces in and out of blast on the first days of January, 1879-85:

NUMBER OF FURNACES IN BLAST, JAN. 1.							
1879.	1880.	1881.	1882.	1883.	1884.	1885.	
Charcoal.....	79	93	160	155	123	78	68
Anthracite.....	96	165	162	169	169	100	86
Bituminous.....	82	136	151	142	138	101	82
Total.....	257	394	473	466	430	288	236

NUMBER OF FURNACES OUT OF BLAST, JAN. 1.							
1879.	1880.	1881.	1882.	1883.	1884.	1885.	
Charcoal.....	150	145	112	117	129	169	159
Anthracite.....	130	67	75	67	64	122	125
Bituminous.....	123	80	68	78	88	135	141
Total.....	403	292	255	262	281	426	425

To make the changes more evident, we subjoin tables showing the percentages of the whole at different dates:

PERCENTAGE OF FURNACES IN BLAST, JAN. 1.							
1879.	1880.	1881.	1882.	1883.	1884.	1885.	
Charcoal.....	30	30	30	30	29	29	30
Anthracite.....	37	41	41	41	41	35	37
Bituminous.....	33	29	29	29	30	36	33

PERCENTAGE OF FURNACES OUT OF BLAST, JAN. 1.							
1879.	1880.	1881.	1882.	1883.	1884.	1885.	
Charcoal.....	33	30	30	30	30	30	30
Anthracite.....	33	30	30	30	30	30	33
Bituminous.....	33	30	30	30	30	30	33

The immigration statistics for the past year show a falling off of about 15 per cent. in the arrivals at all the ports in the United States during the year 1884, compared with 1883. The totals are as follows:

		1884.	1883.
England and Wales.....		22,750	27,033
Ireland.....		58,238	63,841
Scotland.....		8,725	19,541
Austria.....		12,728	11,082
Germany.....		154,501	150,812
Italy.....		14,298	29,446
Norway.....		12,783	19,704
Sweden.....		23,755	28,748
Dominion of Canada.....		45,504	62,218
All other countries.....		68,796	65,821
Total.....		453,958	500,196

Of the arrivals for 1884, as above reported, 322,781, or two-fifths of the entire number,

were landed at the port of New York. It will be observed, respecting the different nationalities represented, that Germany sends by far the largest contingent, but there is a decided decrease in the number coming from that country, as well as from England, Italy and Scandinavia. The movement from Germany meets with strong disapproval on the part of that Government, inasmuch that special openings for colonization are being devised—for example, in Eastern Africa and by the annexation of New Guinea—apparently with the object not only of arresting a serious loss of resources in a direction whence there are small returns, but of opposing a barrier to British ambition in foreign fields. It is possible that an attempted diversion by these methods may be counteracted during the coming season by a severe cut in the steamer rates for passengers by the Transatlantic steamers. Nearly all the lines but the English now offer a passage for \$14, against \$30 one year ago. The industrial depression being felt alike in Europe and America can have little effect either to promote or to retard the movement of population from one country to another.

Reasons for Rejecting the Spanish Treaty.

The special committee of the New York Chamber of Commerce appointed to oppose the ratification of the Spanish treaty have forwarded a vigorous report to the Senate, giving 12 good reasons why the treaty should not be ratified. Among them are the following:

It is not a reciprocity treaty. It should be termed a treaty for the relief of bankrupt Cuban estates, and to make the islands once more a source of revenue to Spain at the expense of the United States.

It would not benefit our manufacturers to any great extent, for the population opened to us is too small, and their purchasing power too limited.

It would destroy our American sugar-producing interests, representing an investment estimated at upward of \$100,000,000.

It would seriously damage our important American tobacco and cigar interests.

It would strengthen and renew the fast-weakening influence of Spain in American waters, and doubly injure American citizens: First, by throwing large numbers out of employment, and, second, by taxing the rest to make up for the revenues presented to Spain.

It would enormously enrich the few persons who are pushing this treaty, just as the Sandwich Islands treaty has done, but this would be at the expense of the American public, and the public interest should not be sacrificed for private gain.

The committee calls attention to the political considerations, which it deems worthy of notice. Mexico and San Domingo, it argues, are sister Republics. The latter, especially, is in sympathy with the institutions and the people of this country, and from her position might be of much value in giving the United States a coaling station in case of war. On the other hand, Cuba and Porto Rico are dependencies of Spain and under Spanish rule of the most arbitrary character. Spain, it is charged, has uniformly treated American interests arbitrarily and unjustly. Helping Spain to continue her control over the only two islands in American waters which remain under Spanish rule would not, it is urged, be to the interest of the United States. These are potent arguments and should have due consideration with the Senate. New York has the largest interest in foreign trade of any city of the Union, and the interests which control the councils of the Chamber of Commerce are not likely to oppose a treaty which might promote a profitable foreign trade.

Wages and Profits.

The officials of the Amalgamated Association, commenting in their column in the *Labor Tribune* upon the article in our issue of December 18th, giving the rates of wages paid in the Eastern rolling mills, say:

Now, if *The Iron Age* will take pains to find out and publish the profits that accrue to the manufacturers who pay these remunerative wages, it will satisfy an anxious public.

We imagine that it would not be a very difficult thing to ascertain the profits of the manufacturers who are paying the wages referred to. In many, if not in most, cases they could be expressed in a very round number. Some of these manufacturers do state their profits, as the concerns are joint stock companies, and the dividends are known. But we confess we do not see what the question of profits has to do with the question of wages, and we had believed that every self-respecting workingman had long ago abandoned the idea that was prevalent some years ago in labor circles, that the profits of manufacturers should be the gauge of wages. The logical sequence of such a claim is that if there are no profits there should be no wages. The basis of wages is the selling price of product, with little or no reference to the gains of manufacturing. This is the basis that the Amalgamated Association itself and the unions preceding it have recognized for the last 20 years in their demands for sliding scales.

The remarks of the Amalgamated Association seem to proceed on the false assumption that, in manufacturing, the wages of labor and the profits of the manufacturers are correlative terms, one bearing the same relation to the laborer that the other does to the manufacturer. The truth is that the wages of labor and the selling prices of product, not profits, are correlative terms. Out of what he receives for his labor—that is, his wages—the workman supports himself, keeps up his laboring power, and also provides for the continued supply of labor

when his own laboring powers shall have been exhausted, by providing for the support and education of his family. The manufacturer does the same thing. Out of what he receives—that is, the selling price of his product—he pays for his raw material, the same as the workingman pays for his food, and provides for the continuance of manufacturing operations by keeping his works in repair and putting in new and improved machinery, the same as the laboring man provides for the continuing supply of labor. What, if any, the workingman and the manufacturer may save over and above what is necessary to these expenditures is the profits of each. What the workingman may put in bank or what the manufacturer may put in bank, after providing for the above matters, or what each may spend in his pleasures or luxuries, is the profits of each; but the profits of the manufacturer in no sense correspond with the wages of labor. Keeping this in view, the idea apparent in the quotation from the Amalgamated Association, that it was an impertinence on our part to publish the wages of labor unless at the same time we publish the profits of manufacturers, has no force. We do publish every week the thing that corresponds to the wages of labor—that is, the selling price of the various articles produced. Any one who chooses can have access to these facts. It is but rarely, however, that we publish the wages of labor. On the other hand, we do occasionally publish the profits of certain manufacturers, but we never, except in very rare instances, have published the profits of the laborer—that is, what he has saved in individual cases out of his earnings.

Financial Condition of Brazil.

Brazilian finances are getting into so bad shape that the export trade of foreign countries to Brazil begins to suffer from it. Thus, the city of Joinville wanted to order last year cast-iron pipe for its intended water-works, but the loss in exchange or the depreciation of the paper milreis was found to be so great, being at present worth only about 41 cents of our money, that the ordering of the pipe had to be postponed, the cost of importation exceeding the appropriation by 7½ per cent. The effect on our trade with Brazil is shown by the latest statistics. During the fiscal year 1883 there were shipped from the United States to Brazil domestic goods to the amount of \$3,159,330; during the fiscal year 1884 only \$8,645,261 worth, while in the latter year we imported \$50,265,889 worth of Brazilian products, against only \$44,483,459 in 1883.

The aggregate indebtedness of Brazil in 1884 was \$63,168,809 milreis, 169,213,333 of which the Empire owes abroad. The great difficulty in Brazil for the past 30 years has been a chronic annual deficit and the unpopularity of direct taxation. The Brazilian Congress not daring to tax the people directly, except to a very moderate extent, imposes about 70 per cent. of the revenue on commerce alone, and partially in the shape of export duties detrimental to the agricultural interests of the country. The budget for 1884-85 estimates the outlay at 133,049,000 milreis, toward which it is further estimated duties on imports will furnish 75,500,000 milreis, and those on exports 17,500,000; together, 93,000,000 from duties on merchandise. The remaining revenue is drawn 9 per cent. from indirect and 21 per cent. from direct taxation. Through the operation of the export duty the State levies a tax of 5 per cent. on all products leaving the country, which is money taken directly out of the pockets of planters, for Brazilian coffee or sugar or other produce will bring no more abroad than the foreign market can afford. Neither the import nor the export duties can be raised any further; if the former were enhanced the higher cost of goods would check importation and the revenue be no greater, and the latter duty is too much complained of and too injurious to be thought of for increasing the revenue.

fore, has a great many advocates. If incorporated in a bill the Brazilian Government may prevail on Congress to pass it, the more so as it needs 70,000,000 milreis for funding the present floating debt, and will have to appeal to European capitalists to place this new issue of bonds, as the money cannot be raised at home. The passage of such a bill might suffice to inspire them with confidence, which it is evident they cannot have under prevailing circumstances.

An Iron Trade Romance.

There is always a reason for every happening. We may be sure of this, even in the case of happenings which seem profoundly mysterious. The explanations of happenings which do not seem mysterious at all, and which casual observers formulate from the surface indications, are not always the correct explanations. These very general statements cover certain basic facts which should be borne in mind when we read the article in a recent issue of the *New York World* tracing the causes which led to the lately announced suspension of Oliver Bros. & Phillips, of Pittsburgh. We regret the necessity which compels us to confess that a journal occupying the position of *The Iron Age* must needs look to the daily press for light on subjects peculiarly within its special field, but it would be disingenuous not to admit that the *World* tells us many things we did not know before, and never should have known had not the editor of that estimable journal detailed to the duty of explaining the failure in question a writer with an analytical mind who believes in going to the root of things. We quote as follows:

The beginning of the present trouble dates back a number of years, when seven of the leading iron companies in America formed a combination known as the Bessemer Steel Company of America.

We are aware that more or less trouble of assorted varieties dates back to the time when the "Bessemer Steel Company of America" was formed, but we did not know before that Oliver Bros. & Phillips shared this trouble in any important degree, or had any hand in helping make it. Evidently there are innermost secrets connected with the organization of this troublesome company which we have not probed. We restrain our impatience and read further:

These companies had theretofore been the manufacturers of what was known as the blue-specular iron and the heaviest, a reddish metal. Some years ago Bessemer, the great English manufacturer, came here with a patent by which the combination of these two qualities of iron could be manufactured into what is now known as Bessemer steel.

We have long suspected this, but have never dared to say it in the absence of proof. Who can wonder that the Western railroad engineers have growled about the quality of rails furnished them, when they were nothing but a mixture of blue specular iron and a reddish metal popularly known as hematite? No wonder the steel-rail makers turned up their noses at Dudley's formulae, and insisted that they knew more about the chemical composition and physical properties of steel rails than he did. Evidently they knew a great deal more, if this is the way they worked the Bessemer process. How the valuable secret came to be a monopoly the *World* relates as follows:

Bessemer undertook to sell his patent, or the right to manufacture under it, to all the rolling mills in the country, of which there were about 30. At that time Oliver Bros. & Phillips, the Bethlehem (Pa.) Iron Company and five others bought the patent and manufactured steel under it.

Part of this we know to be true, and a trifling error in one or two minor particulars only serves to show that the writer has penetrated the very heart of the mystery. We remember Mr. Bessemer's visit very well, and knew his errand. We were present at the grand banquet given in his honor in the basement of Moquin's, in Ann street; but the *World* is mistaken as to the number of rolling mills in the country at that time. There were 21 of them. Mr. Bessemer spent several days visiting them and offering his patent for sale after a practical demonstration of his process. He carried some blue specular iron in one pocket and some hematite in another, and in a plumber's ladle which he had in his grip-sack he used to mix them and so make his steel. Only seven concerns bought shop rights, however, and, as Mr. Bessemer had spent all his collections in railroad fares and hotel bills, some of his friends in New York made up a subscription to buy him a return ticket to England. These details, however, are immaterial. We quote further:

Subsequently an arrangement was entered into among these companies by which three of the mills were to do all the work and the other four were to remain idle, the stockholders in the latter to receive monthly a certain amount equivalent to the natural earnings of their mills when in full blast. The other three companies opened their furnaces, setting men to work, and advanced the price of pig and rail iron until at one time it was as high as \$40 a ton.

We do not remember at the moment whether Oliver Bros. & Phillips' mill was one of the three which worked the Bessemer process, or one of the four which remained idle. But it is unimportant. They were identified with the conspiracy which advanced the price of pig and rail iron to \$49 at one time, and the reckless habits of extravagance fostered by the enormous profits which that price insured sufficiently explain the subsequent bankruptcy of everybody who participated in the division. What they did during the brief hour of their triumph the *World* tells us with impartial exactness, extenuating nothing:

They regulated the product as they saw fit by reducing the time of operation when overstocked, in

an effort to create an artificial famine in the trade, supposing by that means to keep up prices, and, perhaps, stiffen them a little. These mills were run night and day in full blast until the supply by far exceeded the demand, present and prospective. Then came a break, and good pig iron began to decline rapidly until it finally reached \$18 per ton. Railroad iron, which at one time was as high as \$30 per ton, began to fall, until now it has reached \$26.50, the lowest price in the history of the country.

Alas, too true! Then came a break. It was a bad break, too. Even blue specular iron and hematite cannot be profitably mixed for \$26.50 per ton. The story carries its own moral. Let us hope that the lesson of experience will not be lost upon those who have suffered so heavily, and that in future we shall witness no efforts to create an artificial famine in the trade at times when our mills are overstocked. No one who engages in such operations can expect to avert the inevitable. The example of Oliver Bros. & Phillips should be a warning to other houses in the trade. We should apply these sad happenings as our Puritan ancestors applied all Scripture, "by way of improvement," and draw from them the lesson they are found to contain when we search out the reasons for them. We are indebted to the *World* for a new and wholly original contribution to contemporary history, which is both surprising and impressive.

Better Outlook for Pig Iron.

An increased movement in pig iron is a gratifying feature of the iron trade. When any branch of business has been quiet for a long time, a renewal of activity in it is apt to awaken false hopes. Those interested are inclined to believe that another season of prosperity is before them, and they permit themselves to indulge in rosy anticipations, which are unfortunately not realized unless external conditions are favorable. One branch of business cannot be prosperous if all others are decaying. A reaction in the pig-iron trade toward greater business, and perhaps toward better prices, does not seem unlikely after the steady drag of the past 12 months, but it is not quite time to bid farewell to depression and low prices. The production of pig iron at the present time is very probably under the demand. The shrinkage in production in 1884 is estimated at about 17 per cent., as compared with 1883, but it must be borne in mind that the greatest part of the decrease was effected in the last half of the year, so that we are now producing at a considerably lower rate than that of last year. Notwithstanding the general stagnation in business, a very great deal of pig iron will be required this year, and it is a question whether 3,000,000 tons, which is the rate at which we are now producing, will be sufficient for our needs. As spring approaches, the scarcity of pig iron may make itself very noticeable, inasmuch as the country has no stocks of any consequence, and the result will be a general buying movement, which may put prices up slightly. This, however, will be a temporary movement, if it occurs, though it will be a very important one to those consumers of pig iron who have contracts to fill during the spring months, and to whom \$1 or \$2 a ton may make a serious difference. Later in the year the probabilities are in favor of dull trade again, with accompanying ease in prices, unless a change comes over the whole country in the meantime and industries revive generally.

Troubles of Oliver Bros. & Phillips.

The firm of Oliver Bros. & Phillips, of Pittsburgh, have rapidly grown in importance until they rank among the largest iron manufacturers in the United States. Their productions in the form of bar or plate iron or heavy hardware are sold in almost every iron market of the country. The members of the firm are widely known for their energy, enterprise and unremitting devotion to business. Not only have they made their rolling-mill establishment conspicuous for its magnitude and completeness, but they have embarked boldly in other directions, undertaking enterprises which would of themselves have been sufficient to occupy the entire time and energies of less enterprising men. Their colossal undertakings, however, have been affected seriously by the profound depression in business which has now continued so long, and their efforts to stem the tide have been unavailing. Last week they were obliged to suspend payment, temporarily we hope, and the announcement of their troubles naturally caused a great deal of excitement throughout the iron trade of the country, though in some quarters it was not unexpected, in view of the difficulties with which they were known to be contending. They have the sympathy of their fellow-manufacturers in this their day of humiliation, and the belief is generally expressed that, if their creditors are lenient, this ambitious firm will not fail in due time to emerge from their troubles with as bright prospects as ever. A meeting of the creditors took place on Tuesday, and on Tuesday evening we received the following dispatch from our Pittsburgh office:

At the meeting of their creditors, this morning, Oliver Bros. & Phillips submitted a statement showing the total liabilities to be \$1,220,538.92, of which \$265,854.98 are owing on purchase money mortgages, and \$1,011,120.04 on bills payable. Of this latter amount \$300,000 are on notes held by H. W. Oliver, Jr., which will be retired, leaving the net liabilities \$1,053,338.92. The assets are \$2,319,352.42, of which \$1,590,054.42 are in property; \$500,000, the interest of the firm in the Pittsburgh Hinge Company; \$16,350, interest in Iron City

CONDITION OF THE BLAST FURNACES OF THE UNITED STATES, JANUARY 1, 1885.

(Compiled for *The Iron Age*.)

Location of Furnaces.	Charcoal.				Anthracite.				Bituminous or Coke.			
	Total number of stacks.	Number reported in blast.	Capacity per week.	Number reported out of blast.	Total number of stacks.	Number reported in blast.	Capacity per week.	Number reported out of blast.	Total number of stacks.	Number reported in blast.	Capacity per week.	Number reported out of blast.
New England.....	15	2	105	13	1,040	1	0	160	1	0	1	285
New York.....	14	5	429	9	680	40	9	2,200	31	7,915	1	0
New Jersey.....	17	4	1,090	13	3,675	17	4	1,090	13	3,675	1	0
Pennsylvania.....	32	12	641	20	1,260	4	0	0	0	0	0	0
Lehigh Valley.....	51	24	7,005	27	6,930	44	17	4,120	27	3,855	1	0
Schuylkill Valley.....	24	8	2,059	16	2,575	39	23	4,870	16	2,790	17	7
Upper Susquehanna Valley.....	17	7	5,130	10	8,700	4	1	85	3	662	28	9
Lower Susquehanna Valley.....	6	4	1,520	13	3,075	27	14	4,744	13	3,075	27	14
Pittsburgh.....	15	3	300	12	795	5	1	220	4	600	12	9
Allegheny Valley.....	30	8	378	22	1,170	12	9	4,051	3	360	18	5
Shenango Valley.....	6	1	120	5	284	18	7	2,860	11	4,750	15	1
Youghiogheny Valley.....	5	0	0	5	284	15	7	1,270	8	1,505	3	1
Junata and Conemaugh Valley.....	2	0	0	2	400	3	1	400	2	750	8	5
Maryland.....	6	3	310	3	265	8	0	0	0	0	8	5
Virginia.....	8	0	0	8	875	9	4	370	5	688	6	1
North Carolina.....	9	4	370	5	688	6	1	200	5	257	11	7
West Virginia.....	11	7	1,810	4	630	1	0	0	1	140	16	4
Ohio—Mahoning Valley.....	28	10	2,328	18	3,620	11	2	250	9	1,121	2	0
Eastern, Central and Northern.....	9	1	350	8	1,538	1	0	0	8	0	8	4,360
Hocking Valley.....	1	0	0	1	0	1	0	0	1	0	1	0
Hocking Rock.....	1	0	0	1	0	1	0	0	1	0	1	0
Miscellaneous.....	1	0	0	1	0	1	0	0	1	0	1	0
Kentucky.....	1	0	0	1	0	1	0	0	1	0	1	0
Hanging Rock.....	1	0	0	1	0	1	0	0	1	0	1	0
Western Region and Miscellaneous.....	1	0	0	1	0	1	0	0	1	0	1	0
Tennessee.....	1	0	0	1	0	1	0	0	1	0	1	0
Georgia.....	1	0	0	1	0	1	0	0	1	0	1	0
Alabama.....	1	0	0	1	0	1	0	0	1	0	1	0
Indiana.....	1	0	0	1	0	1	0	0	1	0	1	0
Illinois.....	1	0	0	1	0	1	0	0	1	0	1	0
Michigan.....	1	0	0	1	0	1	0	0	1	0	1	0
Wisconsin.....	1	0	0	1	0	1	0	0	1	0	1	0
Minnesota.....	1	0	0	1	0	1	0	0	1	0	1	0
Missouri.....	1	0	0	1	0	1	0	0	1	0	1	0
Texas.....	1	0	0	1	0	1	0	0	1	0	1	0
Utah.....	1	0	0	1	0	1	0	0	1	0	1	0
Oregon.....	1	0	0	1	0	1	0	0	1	0	1	0
Colorado.....	1	0	0	1	0	1	0	0	1	0	1	0
Total.....	231	68	8,371	159	15,941	225	86	21,564	135	28,500	224	82

Nut Lock Company, and \$657,017.94 are bills receivable, good book accounts, stock and cash. The firm propose to pay all claims not secured by mortgages by their notes, one-fifth of which will be paid each year, commencing February 1, 1885, until all are paid. The notes will bear interest at 6 per cent. and will be secured by mortgage covering all the real estate of the firm, to be placed in the hands of trustees named by the creditors. To these semi-annual reports will be made of the condition of the firm, and if, in their opinion, any payments may be anticipated, they will be. The Oliver Wire Company presented a statement showing \$902,322.23 liabilities, and \$1,359,510.99 assets, and make a similar proposition. The meeting appointed a committee of five to audit the statements. They elected Alex. M. Myers, Jas. J. Donnell and Orlando H. Harper, trustees, and adjourned until Thursday, when final action will be taken. It was agreed on all hands that the showing of the firm was eminently satisfactory—much more so than was expected—and no doubt was expressed as to their ability to meet their obligations.

It will be seen from this statement that the affairs of the firm are by no means beyond hope of recovery. A few years of moderate prosperity would enable them to discharge their indebtedness and resume their old position among the solid manufacturing establishments of the country.

A Washington dispatch reports that the President has decided to nominate Carroll D. Wright, of Massachusetts, to be Commissioner of Labor Statistics. This appointment will be greeted with universal satisfaction, as Mr. Wright's services in the circumscribed field of Massachusetts industries have been attended with great success. The results of his investigations into the various conditions of workingmen's existence have been accepted by the most critical publicists as unquestionably conclusive. Mr. Wright pursues his labors with an evident determination to get at the truth, and he therefore perverts nothing in order to demonstrate a pet theory. This freedom from bias naturally commends his reports to all classes of economists, and his translation to a higher sphere of activity will give him much better opportunities to make such extended observations as are necessary in order to deduct economic laws and establish generalizations.

WASHINGTON NEWS.

(From Our Regular Correspondent.)

WASHINGTON, D. C., January 20, 1885.

The official promulgation of the tinplate decision has been delayed on account of the indisposition of one official and absence of another. The decision has been prepared, and will not be of great length. It only awaits the signature of the Secretary of the Treasury. It will doubtless be signed on Thursday. The chief features of the decision will not differ from the announcement already made in this correspondence. It will decide substantially that all sizes and thicknesses of iron covered with a coating of tin have, under the practice of the custom houses at Philadelphia, New York and Boston, been commercially known as tinplate, and classified accordingly. This decision will meet with decided opposition from the home manufacturers, but whether any further steps will be taken, in the courts or elsewhere, remains to be seen. The only effective chance will be in the proposed revision of the tariff by the next Congress.

A REPORT ON ORDINANCE AND WAR SHIPS.

The Select Committee on Ordnance and War Ships, instead of following in the same line as the House Committee on Inquiry as

to the Capacity of Steel-producing Works in the United States, are now preparing their report, and have already obtained authority to print the statements and tables to accompany their report. It is understood that this report will be a valuable contribution to the extent of our information on a subject under our own eye.

TESTS OF IRON AND STEEL.

The Committee on Printing have reported favorably a resolution to print the annual report of tests of iron and steel and other materials for industrial purposes, by Major F. H. Parker, commanding Watertown Arsenal. This report, despite its value to mechanical engineers and scientists, has usually been about a year behind, owing to the tardiness of Congress in authorizing its printing. It is now proposed to hasten the work, so that it may be of some practical value to parties interested.

INTER-OCEANIC PROJECTS.

Captain Eads has left the city, satisfied that during the few weeks remaining of the session there will be no time for the consideration of any business other than the Appropriation bills. He said, before leaving, that he was satisfied of the defeat of the Nicaragua treaty if it should be brought to a vote at this session, and that at the next session he will be on hand to press his project. In the meantime Capt. Bedford Pim, Royal Navy, has established himself here, and is working with considerable energy upon his scheme of a large float or raft, upon which to transport ships of the largest size. His theory is that a raft according to his design and construction would require a canal allowing for 4 feet draft instead of 30, which would be a great saving of outlay for cost of building. He favors the Nicaragua route, because it gives him more natural waterways as part of the proposed canal. The Panama Canal project is regarded as very thoroughly exploded, half of the money having been expended in digging about 3 miles of canal.

RAILROAD FEDERATIONS.

In his report upon the transcontinental railroads of the United States and the railroads of contiguous countries—the Dominion of Canada and the Republic of Mexico—the chief of the Bureau of Statistics conveys much useful data upon the development of the natural resources of the country and the growth of our internal commerce. In a comparative statement of the material resources of the United States in 1850 and 1880, the growth of 30 years is shown. It indicates not only territorial expansion, but agricultural, mining, railroad and mechanical extension unrivaled in the world. The following exhibit illustrates this development:

	1850.	1880.
Improved land in farms, acres.....	113,032,614	284,771,043
Wheat produced, bush.....	100,455,944	430,154,500
Corn produced, bush.....	592,071,101	1,551,068,395
Houses on farms, number.....	4,356,719	10,238,111
Milk cows on farms, number.....	6,365,094	13,125,085
Swine on farms, number.....	80,354,219	43,270,020
Pig iron produced, tons.....	563,755	5,140,972
Coal produced, tons.....	7,358,399	90,000,000
Railroads in operation, miles.....	9,081	121,569
Value of products of manufacture.....	\$1,019,106,616	\$5,369,579,101

A most striking illustration of the changes in the cost of transportation and the increase in the volume of traffic is also shown. The annual freight charges on trunk lines fell from 2.453 cents per ton per mile in 1868 to 1.803 cents in 1873, and to 1.055 cents in 1883. The tonnage, meanwhile, on the New York Central increased from 1,846,599 tons in 1868 to 10,892,440 tons in 1883; on the New York, Lake Erie and Western Railroad

from 3,908,243 tons in 1868 to 13,610,623 tons in 1883, and on the Pennsylvania Railroad from 4,722,015 tons in 1868 to 21,675,000 tons in 1883.

TARIFF IN FOREIGN COUNTRIES.

The attention of Members of the House of Representatives has been called to the fact that in several of the countries of Europe the agricultural population is beginning to make an outcry against the free importation of American agricultural products. The revenue reformers claim that this is a retaliation for our prohibitory legislation on articles of manufacture, and the tariff men reply that that has nothing to do with it, that it is the principle of English free trade only, applied to exports of American cheap bread-stuffs into foreign countries, to the detriment of home agriculture instead of to imports of cheap foreign manufactures into the United States, to the injury of home manufactures there. It will introduce, however, a new element into the discussion of the tariff question when it does come up. The American hog question was a practical illustration of the effect of foreign discrimination, and the remedial measures proposed were not free trade for German products, but retaliatory measures against German wines and other products of the country largely in demand in the United States, and, therefore, a source of wealth to German producers.

AMENDMENT TO DRAWBACK LAW.

Mr. Hewitt, from the Committee on Ways and Means, has reported a bill directing the repayment of the whole duty paid on materials subsequently manufactured and exported. Under the law as it now stands, 10 per cent. of the duties has been retained by the Treasury to pay the cost of customs administration.

Progress of the Fads Ship Railway.—Capt. James B. Eads was recently interviewed while on a brief visit to Pittsburgh, and asked as to the status of the ship railway. "The public is pretty familiar with our efforts two years ago to get Congress to guarantee the interest on \$50,000,000 at 4 per cent. for a term of years. We were unsuccessful in that, but have almost practically obtained the same concession from the Mexican Government. General Diaz, during his previous term as President of Mexico, was enthusiastically in favor of the enterprise, and since his reelection additional valuable concessions have been assured us. We have ample capital subscribed. There are about 40 stockholders in Pittsburgh. Besides others in St. Louis, Cincinnati, New York and other cities. We can get all the money we want in London, but prefer, if it can be done, to have the money raised in this country."

The Rival Boston Exhibitions.—A letter from Boston says that the war of the two mechanics' exhibitions has brought out the fact that, while the New England Manufacturers' Institute has gone into bankruptcy, the old Mechanics' Fair is next thing to it. Two great buildings were totally unnecessary, but neither would leave the field clear for the other; the consequence is that both are financially embarrassed. At the meeting of the Mechanics' Association this week a social or tea party for the relief of the association was discussed, and also an assessment of members, to clear off the most pressing of the liabilities.

As we are about to go to press we are in receipt of the following dispatch from our Philadelphia office: "Sales to-day of 8000 to 10,000 tons of low-grade pig irons, including Southern, at a slight shading on quoted rates."

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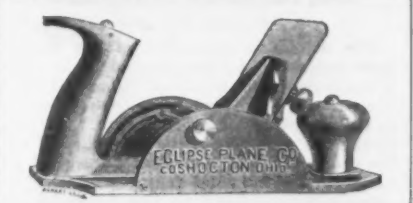
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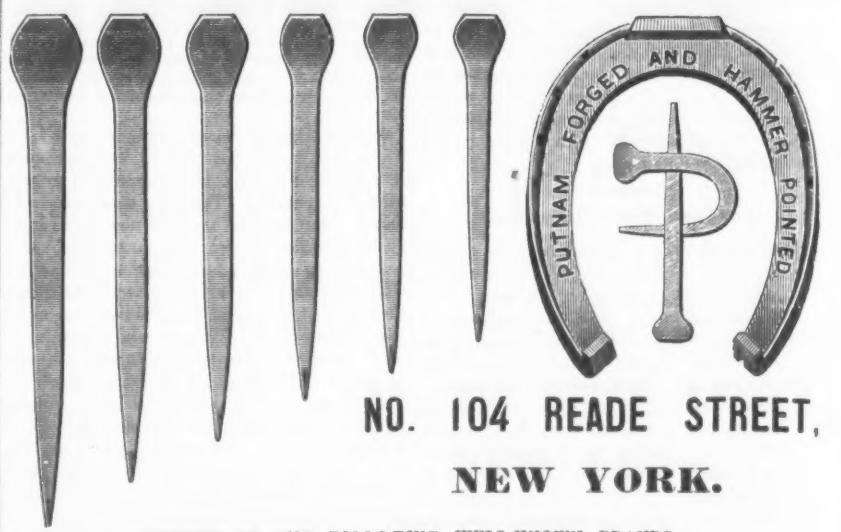
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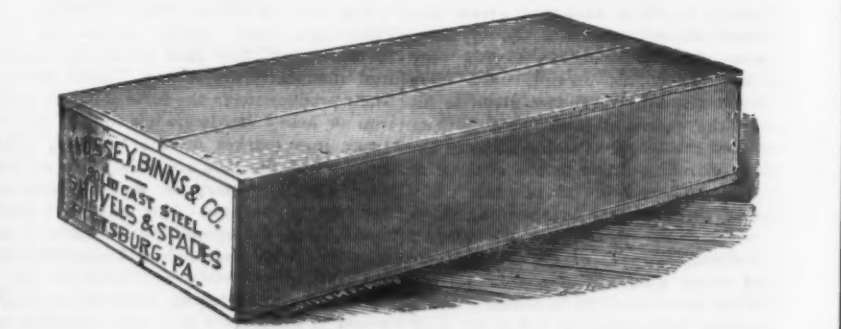
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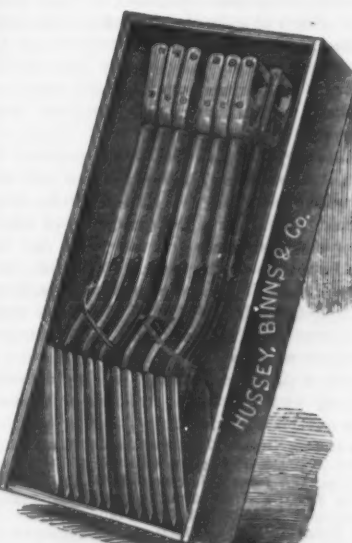
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Baker Hermann & Co., 101 and 103	28
Duane, N. Y., 21 Chambers, N. Y.	28
Harrington & Richardson, Worcester,	34
Mass.	34
Scott W. P., agent, 20 Warren, N. Y.	34
Shoverling, Day & Sales, 84 and 86 Cham-	40
bers, N. Y.	40
Stevens J. & Co., Chicopee Falls, Mass.	33
Asbestos.	
The Asbestos Packing Co., Boston, Mass.	11
Chalmers-Spence Co., 419 8th, N. Y.	9
Asbestos Paints.	
H. W. Johns Mfg. Co., 87 Maiden Lane, N. Y.	43
Augers and Bits.	
Jennings C. E. & Co., 96 Chambers, N. Y.	27
Bates, Wilson & Co., 294 Broadway, N. Y.	16
Axles, Springs, &c., Manufacturers of.	
Cook & Sons, Winsted, Conn.	13
Gautier Steel Dept. of Cambria Iron Co.,	10
Johnstown, Pa.	10
Liggett Spring & Axle Co., Pittsburgh	8
Wurster F. W., Brooklyn, N. Y.	46
Axes.	
Mann W. Jr. & Co., Lewistown, Pa.	3
Peck A. O. & Co., Cohoes, N. Y.	46
Bankers.	
F. W. Gallaudet & Co., 2 Wall, N. Y.	9
Bar Iron.	
Virginia Nail and Iron Works Co., Lynch-	16
burg, Va.	16
Barb Wire and Fence.	
Hawk Eye Steel Barb Fence Co., Burling-	10
ton, N. Y.	10
Iowa Barb Wire Co., Burlington, N. Y.	11
The Buck Thorn Fence Co., Trenton, N. J.	11
Thorn Wire Hedge Co., Chicago, Ill.	3
Washburn & Moen Mfg. Co., Worcester,	2
Mass.	2
Bellevue, Manufacturers of.	
Bullock T. H., Cleveland, O.	33
Scott Geo. M., Chicago, Ill.	24
Bells (Steigh).	
Bevin Bros. Mfg. Co., Easthampton	10
Belting, Makers of.	
Alexander Bros., 112 N. 2d, Philadelphia	28
Main Belting Co., Philadelphia, Pa.	24
N. Y. Belting & Packing Co., 13 and 15 Park	13
Row, N. Y.	13
Belt Oil.	
Post E. & Co., 10 Peck Slip, N. Y.	30
Bicycles.	
Pope Mfg. Co., 597 Washington, Boston	46
Bird Cages, Makers of.	
Lindeman O. & Co., 254 Pearl, N. Y.	2
Maxwell John, 247 and 249 Pearl, N. Y.	7
Bit Braces.	
Amidon & White, Buffalo, N. Y.	36
Ives W. A. & Co., New Haven, Conn.	45
Saxton E. B., Buffalo, N. Y.	34
Blind Awning Fixtures.	
North F. O. & Co., Boston, Mass.	45
Blocks, Tackles, Makers of.	
Bagnall & Laid, Boston, Mass.	45
Detroit Block Works, Detroit, Mich.	7
McCoy & Sanders, 20 Warren, N. Y.	40
McMillan Wm. H., 113 South, N. Y.	11
Penfield Block Co., Lockport, N. Y.	16
Blowers.	
Day Bros., Philadelphia, Pa.	24
Boiler Cleaners.	
Cockshutt & Lord, Savannah, Ga.	44
Boiler Compound.	
Crescent Mfg. Co., Cleveland, O.	16
Boilers, Steam.	
Habcock & Wilcox Co., 70 Cortlandt, N. Y.	12
Edge Moor Iron Co., 79 Liberty, N. Y.	12
Harrison Boiler Works, Philadelphia	45
Lawson Non-Explosive Boiler Co., 130	6
Broadway, N. Y.	6
Wetherill Robt. & Co., Chester, Pa.	46
Boiler Plates.	
Wm. McIlvaine & Sons, Reading, Pa.	45
The Sealed and Sealed Co., Wilmington,	45
Del.	45
Bolt and Rivet Clippers.	
Chambers, Brother & Co., Philadelphia	4
Bolt Cutters.	
Acme Machinery Co., Cleveland, O.	13
Howard Iron Works, Buffalo, N. Y.	43
Sellers Wm. & Co., Philadelphia	43
Liberty, N. Y.	43
Wiley & Russell Mfg. Co., Greenfield, Mass.	31
Books.	
Comstock Wm. T. & Astor Place, N. Y.	9
Boring Implements.	
Amidon & White, Buffalo, N. Y.	36
Ives W. A. & Co., New Haven, Conn.	45
Boxes for Hardware.	
Green S. H., 12 Murray, N. Y.	28
Brackets.	
Penn. Hdw. Works, Reading, Pa.	31
Brass, Manufacturers of.	
Ansonia Brass & Copper Co., 19 Cliff,	2
N. Y.	2
Bridgeport Brass Co., 70 Cortlandt, N. Y.	12
Brown & Bros., 81 Chambers, N. Y.	2
Davis John & Sons, 100 John, N. Y.	2
Holmes, Heath & Hayden, 50 Park Place,	3
N. Y.	3
Plaine & Alwood Mfg. Co., 18 Murray,	3
N. Y.	3
Rome Iron Works, Rome, N. Y.	22
Southern Mfg. Co., 421 Broome, N. Y.	22
Waterbury Brass Co., 250 E. W. Y.	2
Brass Butt Hinges.	
Hibout W. J., 15 and 18 Chambers, N. Y.	24
Brass Foundries.	
McFarland Wm., Trenton, N. J.	28
Reeves Paul S., Philadelphia	46
Brass Goods.	
Waterbury & Co., Waterbury, Conn.	2
Bridge Builders.	
Moseley Iron Bridge & Roof Co., 5 Day,	1
N. Y.	1
Union Bridge Co., 52 Wall, N. Y.	42
Brushes.	
Brownell Brush & Wire Goods Co., Cin-	3
cinnati, O.	3
Buckets, Pump and Elevator.	
Iron Clad Mfg. Co., 22 Cliff, N. Y.	46
Builders' Hardware.	
Nimick & Brittan Mfg. Co., Pittsburgh	24
Butcher and Shoe Knives, Manu-	
facturers of.	
Wheeler John, Sheffield, England	10
Butts and Hinges.	
Chicago Spring Butt Co., Chicago, Ill.	41
New England Butt Co., Providence, R. I.	40
Sabin Machine Co., Montpelier, Vt.	10
Smith & Egge Mfg. Co., Bridgeport	43
Stanley Works, New Britain, Conn.	33
Union Mfg. Co., 96 Chambers, N. Y.	7
Calipers and Dividers.	
Stevens J. & Co., Chicopee Falls, Mass.	33
Car Axles.	
Roberts & P. & Co., 265 S. 4th, Phila.	6
Carriage Bolts, Makers of.	
Townsend, Wilson & Hubbard, Phila.	43
Carriage Hardware, Makers of.	
De Clapp Mfg. Co., Auburn, N. Y.	35
Smith E. D. & Co., Plantville, Pa.	35
Woodruff, Miller & Co., Mount Carmel, Co.	35
Upson Nut Co., 99 Chambers, N. Y.	44
Car Wheels.	
Union Foundry & Pullman Car Wheel	37
Works, Chicago, Ill.	37
Whitney A. & Sons, Philadelphia	6
Cash Boxes.	
Muller Lock Co., Philadelphia, Pa.	30
Casters.	
Phoenix Caster Co., Indianapolis	37
Castings, Iron.	
S. Cheney & Son, Manlius, N. Y.	28
Devlin Bros. & Co., Philadelphia, Pa.	7
Haight & Clark, Albany, N. Y.	34
Hammer & Co., Bradford, Conn.	42
North Brothers, Philadelphia, Pa.	24
Syracuse Mail Iron Wks., Syracuse, N. Y.	4
Wetherill Robt. & Co., Chester, Pa.	45

Wallace Wm. H. & Co., Albany & Wash- ington streets, N. Y.	4
Wilson H. R. & Co., Philadelphia, Pa.	4
Whitney A. R. & Co., 58 Hudson N. Y.	4
Iron Foundries.	
Bannan, Fras. B. Pottsville, Pa.	4
J. W. Pullman, Philadelphia, Pa.	5
Iron Pig, Importers of.	
Abbott Jere & Co. (Swedish), New York & Boston.	39
Paul, Newell & Co., Boston, Mass.	39
Williamson James & Co., 60 Wall, N. Y.	2
Iron Planers.	
Brettel Geo. E., Rochester, N. Y.	45
Iron Sheet, Manufacturers of.	
Everson, Brown & Co., Pittsburgh, Pa.	4
W. C. G. & Co., Galveston City, Jersey City, & Lefferts, Marshall & Co., 160 Beekman, N. Y.	4
Merry John & Co., 535 to 547 W. 16th, N. Y.	4
W. D. & E. & Co., Philadelphia, Pa.	4
Iron, Steel and Nails.	
Morris, Wheeler & Co., 14 Cliff, N. Y.	5
Iron, Laundry and Sads	
New England Butt Co., Providence, R. I.	40
Key Blanks.	
Eagle Lock Co., 98 Chambers, N. Y.	35
Scott G. W., Philadelphia, Pa.	35
Lamp Stoves	
Florence Machine Co., Florence, Mass.	30
Lathes.	
Harrington, E. & Son, Philadelphia	45
Ohl Geo. A. & Co., East Newark, N. J.	45
Lawn Mowers.	
Chadbourne & Coldwell Mfg. Co., New burg, N. Y.	45
Dille & McGuire Mfg. Co., Richmond, Ind.	41
East, Foot & Co., Springfield, O.	42
Leam Squeezers.	
Ripley Mfg. Co., Unionville, Conn.	36
Locks and Knobs, Manufacturers of	
Durrie & McCarty, 97 Chambers, N. Y.	24
Eagle Lock Co., 98 Chambers, N. Y.	24
Nimick & Brittan Mfg. Co., Pittsburgh	24
Quackenbush J. E. & Son, 535 8th av., N. Y.	10
Smith & Egge Mfg. Co., Bridgeport, Conn.	43
Taylor & Boggs Fdry. Co., Cleveland, O.	33
The Charles Parker Co., Meriden	34
Machine.	
Adt John & Son, New Haven, Conn.	43
Barnes W. F. & John, Rockford, Ill.	40
Garvin E. & Co., 139 Cortlandt, N. Y.	45
Harrington E. & Son, Philadelphia	45
Lombard Geo. R. & Co., Augusta, Ga.	31
Mecklenburg Iron Works, Charlotte, N. C.	37
Peerless Punch & Shear Co., 38 W. Day, N. Y.	45
Phelps Dodge & Co., Phila.	45
Sellers Wm. & Co., Philadelphia, and 79 Liberty, N. Y.	45
Stow Flexible Shaft Co., Ltd., Phila.	40
The Glamorgan Co., Lynchburg, Va.	10
The Silesia & Far East Press Co., Lancaster, Pa.	46
Union Foundry & Pullman Car Wheel Works, Chicago, Ill.	37
Wetherill Robert & Co., Chester, Pa.	45
Machine's Tools and Supplies.	
Blaisdell P. & Co., Worcester, Mass.	43
Brettel Geo. E., Rochester, N. Y.	45
King M. & Co., Philadelphia, and 79 Sellers Wm. & Co., Philadelphia, and 79 Liberty, N. Y.	45
Nails.	
J. N. Handle & Mallet Works, 456 E. Penfield Block, N. Y.	13
Measuring Faucets.	
Lane Bros., Poughkeepsie, N. Y.	35
Measuring Tapes.	
Eddy Geo. M. & Co., 352 Clason av., Brooklyn	6
Nets.	
Dickerson Van Dusen & Co., 29 and 31 Nassau, N. Y.	2
Naylor & Co., 99 John, N. Y.	38
Phelps Dodge & Co., Cliff st., N. Y.	3
Royce & Brown, 120 N. 4th, N. Y.	13
512 Arch, Philadelphia	13
Nettlists.	
Broth, Garrett & Blair, 191 Chant, Phila.	5
Bruton J. Blodgett, 359 Walnut, Phila.	38
Nice, Bone Grinding.	
W. H. & Co., Easton, Pa.	30
File Lamps.	
Leonard Bros., Scranton	7
Folding Sads.	
Emmerick J. A. & Co., 1056 Beach, Phila.	3
Faxon J. W. & Co., 514 Beach, Phila.	6
Fence Traps.	
The F. F. Adams Co., Erie, Pa.	24
Philly Mfg. Co., Erie, Pa.	11
W. H. & Co., Unionville, Conn.	36
Falls.	
Bellair National Works, Bellair, O.	31
Borden & Lovell, 70 West, N. Y.	4
C. & B. Brown & Co., Bristol, Conn.	7
C. & B. Brown & Co., Bristol, Conn.	7
Fuller Bros. & Co., 139 Greenwich, N. Y.	4
Livingston Horse Nail Co., 104 Read, N. Y.	16
Oxford Iron Co., 81 Washington, N. Y.	4
Riverside Iron Works, Wheeling, W. Va.	37
Ronald J. & Co., 96 Chambers, N. Y.	46
Virginia Nail and Iron Works Co., Lynch- burg, Va.	16
Falls, Cut.	
Blankenship R. E., Richmond, Va.	7
Borden & Lovell, 70 West, N. Y.	4
La Belle Iron Works, Wheeling, W. Va.	37
W. H. & Co., Chambers, N. Y.	46
Nail Machinery.	
Pittsburgh Mfg. Co., Pittsburgh, Pa.	43
Nickel Platers' Supplies.	
The Zucker & Levett Chemical Co., 540 to 544 West 10th, N. Y.	27
Norway Shanks, Rollers of.	
Naylor & Co., 99 John, N. Y.	38
Ronald J. & Co., 96 Chambers, N. Y.	46
Nuts, Bolts, &c., Makers of.	
The Allentown Rolling Mills, Allentown, Pa.	4
F. M. H. Baker & Co., Newark, N. J.	12
Lambert W. C., Norwich, Conn.	12
New Haven Nut Co., Westville, Conn.	3
Russell, Burdall & Ward, Port Chester.	40
Upon Nut Co., 96 Chambers, N. Y.	46
Oil Stoves.	
Chase Geo., 107th & Harlem River, N. Y.	36
Packing.	
Chalmers-Spence Co., 419 Eighth, N. Y.	9
N. Y. Belting and Packing Co., 15 and 16 Park Row, N. Y.	3
Packs.	
Eagle Lock Co., 98 Chambers, N. Y.	35
Nimick & Brittan Mfg. Co., Pittsburgh	24
Scott G. W., Philadelphia, Pa.	35
Smith & Egge Mfg. Co., Bridgeport, Conn.	43
Paint.	
Cleveland Iron Ore Paint Co., Cleveland	8
Patent Solicitors.	
Benjamin Geo. H., 234 Broadway, N. Y.	30
Houston & Co., Phila.	43
Roeder & Breisen, 162 & 34 Nassau, N. Y.	3
Stetson Thos. D., 23 Murray, N. Y.	7
Stocking E. B., Washington, D. C.	42
Pens, Steel.	
Miller Bros., Steel Pen Co., 26 John, N. Y.	9
Miller Bros., Meriden, Conn.	13
Perforated Sheet Metal.	
Harrington & King Perforating Co., Hartford, Conn.	39
Phosphor Bronze.	
Phosphor Bronze Smelting Co., Limited, 612 Arch, Philadelphia	13
Naumann F., 479 Broome, N. Y.	3
Picks, Makers of.	
Pierston & Co., 24 Broadway, N. Y.	4
Pig Iron.	
Belair National Works, Bellair, O.	31
Brier Hill Iron & Coal Co., Youngstown, O.	38
Montour Iron and Steel Co., Reading, Pa.	38
W. H. & Co., 98 William, N. Y.	4
Pipe Cutters.	
Pancoast & Maule, Philadelphia	40
Pipes, Fittings, &c., Makers of.	
McCah & Barrie Mfg. Co., 50 John, N. Y.	43
Pipe, Water and Gas, Makers of.	
McLert Foundry & Machine Co., Limited, Reading, Pa.	15
Reading, Pa.	15
Wood R. D. & Co., 400 Chestnut, Phila.	4
W. H. & Co., Elmira, N. Y.	13
Plane Irons, Manufacturers of.	
Eclipse Plane Co., Conshohocken, O.	14
Stanley Rule & Level Co., 239 Chambers, N. Y.	36
Planes, Iron.	
Meriden Malleable Iron Co., Meriden, Conn.	36
Plated Ware.	
Hall, Hike & Co., 47 E. 13th, N. Y.	17
Plows.	
Economist Plow Co., South Bend, Ind.	11
Obermayer S. & Co., Cincinnati, O.	28
Plumbers' Materials, Manufacturers.	
Everhart Jas. M., Scranton, Pa.	46
Power Hammers.	
Beaudry & Cunningham, Boston, Mass.	44
Bliss E. & Co., Chicago, Ill.	44
Duncan W. P. & Co., Bellefonte, Pa.	34
Williams, White & Co., Moline, Ill.	31
Presses, Dies, &c.	
Bliss E. W., Brooklyn, N. Y.	44
Crosby G. & Co., Chicago, Ill.	44
Ferracute Machine Co., Bridgeton, N. J.	16
Presses, Power, Makers of.	
Becher & Peck, New Haven, Conn.	16
Bliss E. W., 107 Plymouth, Brooklyn	44
Merrillman A. H., West Meriden, Conn.	44
Reed & Panch & Shear Co., 38 W. Day, N. Y.	45
Stiles & Parker Press Co., Middletown	46
Printers.	
Gies & Co.	
Rails.	
Stearns E. C. & Co., Syracuse, N. Y.	46
Walker Mfg. Co., Cleveland, O.	44
Pumps, Makers of.	
Douglas W. B., Middletown, Conn.	7
Silver & Denning Mfg. Co., Salem, O.	7
Punching and Shearing Presses.	
Williams, White & Co., Moline, Ill.	31
Rails, Iron and Steel.	
Allentown Rolling Mills, Allentown	5
Cambria Iron Co., Johnstown, Pa.	5
Cleveland Rolling Mill Co., Cleveland	38
Jansen, Hershbaum & Co., 16 Exchange Place, N. Y.	6
Montour Iron and Steel Co., Reading, Pa.	38
Pittsburgh Bessemer Steel Co., Pitts- burgh	38
Scranton Steel Co., 50 Broadway, N. Y.	38
Railway Supplies.	
Fox & Drummond, 98 Wall, N. Y.	4
Razors.	
J. R. Torrey Razor Co., Worcester, Mass.	10
Razor Strops.	
Lloyd & Supply Hdw. Co., Philadelphia	24
Refrigerator Fastenings.	
Crossant Chas. & Bro., Albany, N. Y.	41
Rivets.	
Blake & Johnson, Waterbury, Conn.	8
Grundy & Disoway, 195 Greenwich, N. Y.	12
Old Colony Rivet Co., Kingston, Mass.	2
Townsend & F. & Co., Pittsburgh, Pa.	43
Rock Breakers.	
Farrel Foundry & Machine Co., Ansonia, Conn.	42
Rock Drills.	
Clay Steam Pump Works, Brooklyn	44
Roofing.	
Northrop A. & Co., Pittsburgh, Pa.	28
Roofing Plates.	
Merchant & Co., Philadelphia, Pa.	27
Rules, Manufacturers of.	
Stanley Rule & Level Co., 29 Chambers, N. Y.	9
Sad Irons.	
Enterprise Mfg. Co., Philadelphia	40
Saw Spouts.	
Post C. C., Burlington, Vt.	10
Sash Balances.	
Hugunin R. B., Hartford, Conn.	36
Sash Chains.	
Morton Thomas, 65 Elizabeth, N. Y.	40
Smith & Egge Mfg. Co., Bridgeport, Conn.	43
Saws, Makers of.	
T. C. Conway Co., Ltd., 20 Warren, N. Y.	6
Union Iron Works, Philadelphia	32
Wheeler, Madden & Clemens Mfg. Co., Buffalo, N. Y.	10
Saws (Barrow).	
Little Chas. E., 50 Fulton, N. Y.	10
Saw Sets.	
Farr Assa, 64 College Place, N. Y.	33
Crossant Chas. & Bro., Albany, N. Y.	41
Flagler, Forsyth & Piersen, 238 Broad- way, N. Y.	10
Scales, Manufacturers of.	
Buffalo Scale Co., Buffalo, N. Y.	42
Chattillon John & Sons, 91 Cliff, N. Y.	43
Richie Bros. & Co., Philadelphia	43
Scrapers.	
Sidney Steel Scraper Co., Sidney, O.	37
Screw Casters.	
Am. Bolt and Screw Case Co., Dayton, O.	8
Screw Drivers.	
Chicago Screw Driver Wks., Chicago, Ill.	16
Screws, Makers of.	
Billerbeck J., 17th and Venango Sts., Philadelphia	13
Bruce Geo. W., 1 Platt, N. Y.	9
W. H. & Co., Newark, N. J.	12
Miles F. S., 205 Quarry, Philadelphia	6
Screw Cutting Machinery.	
Wiley & Russell Mfg. Co., Greenfield, Mass.	31
Scroll Saws.	
Millers Falls Co., 74 Chambers, N. Y.	34
Seneca Falls Mfg. Co., Seneca Falls, N. Y.	46
Seymour.	
A. F. Pike Mfg. Co., Pike Station, N. H.	43
Shafting, Makers of.	
Cresson Geo. V., Philadelphia, Pa.	45
Edison Shafting Mfg. Co., 191 Fulton, N. Y.	42
Peerless Pumping Co., West Troy, N. Y.	44
Deary, N. Y.	45
Sellers Wm. & Co., Philadelphia, and 79 Liberty, N. Y.	45
Shams.	
Acme Shear Co., Bridgeport, Ct.	42
Cheney Bros., Bristol, Conn.	6
Shays, Iron.	
Watson & Stillman, 4702 Grand, N. Y.	45
Sheet Iron Building Materials.	
Northrop A. & Co., Pittsburgh, Pa.	38
Sheep Shears.	
Hill Bros. & Co., Walsall, England	30
Shelf Supports.	
Quincy Floor Plate and Staple Mfg. Co., Quincy, Ill.	28
Ship Chandeliers.	
Creed Geo. H., 103 Read, N. Y.	36
Shovels, Spades and Scoops.	
Hussey, Bird & Co., Pittsburg, Pa.	16
Shutters, Revolving.	
C. J. Bennett & Co., 162 & 164 W. 27th, N. Y.	35
Sinks.	
Douglas W. & B., Middletown, Conn.	7
Sieves.	
Sidney Shepard & Co., Buffalo, N. Y.	37
Skates, Ice.	
Brooms H. & Co., Boston, Mass.	35
Levenworth, F. H. & Co., Detroit, Mich.	10
Lowentraub Y. Newark, N. J.	10
Neely Thad A., Newark, Ind.	36
Northwestern Hdw. Co., Richmond, Ind.	6
W. H. & Co., Elmira, N. Y.	13
Winslow Frank E., Boston, Mass.	37
Smelting Works.	
Reeves Paul S., 769 South Broad, Phila.	45
Solder.	
Bellair E. A. & Co., Chicago	46
Spending Tubes.	
Ostrander W. R. & Co., 21 & 23 Ann, N. Y.	12
Spelter.	
Manning & Squire, 113 Liberty, N. Y.	2
Spooled Wire.	
Sullivan & Co., Cleveland, O.	9
Spring.	
Morgan Spring Co., Worcester, Mass.	35
Tue Mfg. Co., Brockton, Mass.	43
Spring Hinge.	
Van Wagner & Williams Co., 85 Bea- man, N. Y.	46
Staples.	
Force Tack Co., Florence, Mass.	38
Larned S. H., Worcester, Mass.	38
Steam Hammers, &c., Makers of.	
Dignett & Eisenhardt, Philadelphia, Pa.	44
Edwards & Co., Chicago, Ill.	39
Steam Pump, &c., Manufacturers.	
Dean Bros. Steam Pump Works, Indian- apolis, Ind.	30
Northrop A. & Co., Pittsburgh, Pa.	38
Norwalk Iron Wks. Co., So. Norwalk	46
Steam Traps.	
Curtis Regulator Co., Boston, Mass.	12
Steel Figures and Alphabets.	
Stutrows & Dickey, Cleveland, O.	12
Stutrows & Dickey, Cleveland, O.	12
Steel Importers.	
Abbott Jere & Co., New York & Boston	39
Carr J. & Riley, 30 Gold, N. Y.	38
Hobson Francis & Son, 97 John, N. Y.	38
Montgomery & Co., 105 Fulton, N. Y.	37
Pierston & Co., 24 Broadway, N. Y.	4
Whitney A. R. & Co., 58 Hudson, N. Y.	4
Steel (Musher's) Special.	
James B. M. & Co., 11 & 13 Oliver, Boston	38
Steel Manufacturers.	
Albany & Rensselaer Iron & Steel Co., Troy, N. Y.	38
Anderson, Day & Co., Pittsburgh	38
Burrows Thos. C., 90-101 John, N. Y.	38
Crouse Steel Works, Brooklyn, N. Y.	38
Edwards & Co., 105 Fulton, N. Y.	37
Gaulter Steel Department of, Can- tron Iron Co., Johnstown, Pa.	38
Grove, Grider & Co., Philadelphia, Pa.	38
Jessop Wm. & Sons, Sheffield, Eng.	9
John, N. Y.	38
McDermott & Bera Stone Co., Cleveland	36
Miller, Metcalf & Parkin, Pittsburgh	38
Moss F. W., 80 John, N. Y.	38
Old John, N. Y.	38
Pennsylvania Steel Co., 295 4th, Phila.	38
Philadelphia Steel Forge, Philadelphia	38
R. H. & Co., 105 Fulton, N. Y.	37
Rowland Wm. & Harvey, Frankford, Philadelphia	46
Steel Spiral Springs, Manufacturers.	
Carr & Moen, 22 W. 35th, N. Y.	3
Chafflon John & Co., 101 Chambers, N. Y.	3
Rowland Wm. & Harvey, Frankford, Philadelphia	46
Steel, Tool.	
Brown & Co., Pittsburgh, Pa.	37
John, N. Y.	38
Stocks and Dies.	
Hart Mfg. Co., Cleveland, O.	44
Wiley & Russell Mfg. Co., Greenfield, Mass.	31
Stove Trucks.	
Tucker & Dorsey Mfg. Co., Indianapolis	37
Saw and Hay Cutters.	
Newark Machine Co., Columbus, O.	33
Tacks.	
American Tack Co., Fairhaven, O.	8
Cobb & Drew, Plymouth, Mass.	13
Grundy & Disoway, 195 Greenwich, N. Y.	12
Phillips E. & Sons, South Hanover, Mass.	13
Taps and Dies.	
Carpenter J. M., Pawtucket, R. I.	46
Manning, Maxwell & Moore, 111 Liberty	44
Wiley & Russell Mfg. Co., Greenfield, Mass.	31
Taps and Reamers.	
Redfield J. E., Essex, Conn.	40
Tea Kettles.	
Chemung Hollow Ware Co., Elmira, N. Y.	40
Testing Machines.	
Richie Bros., Philadelphia	43
Tools, Steam and Gas Fitters.	
D. Saunders' Sons, Yonkers, N. Y.	44
Tools, Stone and Marble Cutters.	
Harvey H. H., Augusta, Me.	37
Tramway Lifters.	
Bother F. A. & Co., Chicago, Ill.	38
Wheatman J. C., Chicago, Ill.	38
Trucks, Manufacturers of.	
Penfield Block Co., Lockport, N. Y.	16
Richie Bros., 10th above Master, Phila.	43
Tube Scrapers.	
Chalmers-Spence Co., 419 Eighth, N. Y.	9
Chalmers-Spence Co., 419 Eighth, N. Y.	9
Kuffner & Dunn, Philadelphia, Pa.	45
Tubes, Seamless.	
Charles H. Besley & Co., Chicago, Ill.	42
Tubes, Seamless Drawn Copper.	
Bridgeport Brass Co., 19 Murray, N. Y.	2
Bridgeport Brass Co., Bridgeport, Conn.	2
Turning (Wood).	
Ripley Mfg. Co., Unionville, Conn.	36
Turn-Buckles.	
Merrill Bros., 28 First, Brooklyn, E. D.	13
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Trade Report.

Philadelphia.

Office of The Iron Age, 220 South Fourth St.,
PHILADELPHIA, January 20, 1885.

Pig Iron.—The events of the past week have not been favorable to an improvement in business, although it would be difficult to show that any direct injury has been sustained. Confidence has been shaken, however, and the feeling is undoubtedly less hopeful than it was a year ago. Pig Iron is not notably lower than it was, but there is not the same uniformity that prevailed at that time, neither can sales be made to the same extent. Buyers are inclined to wait a while longer, with perhaps more fear than hope that it will be prudent for them to do so, and while such a feeling predominates it is hopeless to look for a better market. Nothing can be said or done to help matters, so that business is likely to drift along until something transpires to give the market a more definite character than it now has. Meanwhile, standard brands are held at firm quotations, although there is only a very moderate demand. Some irregularity prevails in outside brands, the tendency being to shade prices sooner than lose a sale. It is very difficult—impossible, in fact—to state precisely what the market really is on this class of Iron. Price is one thing, delivery another, and quality still another. Sales have been made to a considerable extent of Alabama, Georgia and other Irons, from which it must be inferred that buyers consider them cheaper than Pennsylvania Irons or they would not take them in preference. The relative cheapness depends in a measure on the point of delivery, but, whatever the reason may be, the loss of so much business is becoming a serious matter to Pennsylvania companies. This competition may not be permanent, but it has come at a most unfortunate time, and looks as though it had come to stay. As an indication of values it may be said that good qualities of Southern Gray Forge are offered at \$15.50, with a probability that \$15 @ \$15.25 has been accepted for 1000-ton lots. Including Southern Irons, a very large amount of business has been done since the first of the year, so that a little dullness now should not be considered unusual. Standard brands, as already mentioned, are held at steady prices—say, \$16, \$17 and \$18 for the three grades, delivered at tide. The leading furnaces are understood to be well sold up, and are not pressing sales, although there are some who may shade a trifle on the lower grades. At all events, something less than \$16 and \$17 is said to have been accepted in recent transactions, but the circumstances were rather exceptional. On the whole, however, the market is barely steady; in many cases it is feverish and irregular, and in others has shown a slight tendency toward lower figures.

Foreign Iron.—The only transaction mentioned during the week was one of 1000 tons special brand of Bessemer, supposed to be at about \$20, Philadelphia. No demand for Spiegel or ordinary brands of Bessemer.

Muck Bars.—A very limited business has been done on the basis of \$27 @ \$27.50 at mill for good Bars, with lower figures possible on large lots.

Blooms.—No demand of importance; quotations nominal, as follows: Charcoal Blooms at \$52 @ \$53; Run-out Anthracite, \$43 @ \$44; Scrap Blooms, \$35 @ \$36; Northern Ore Blooms, \$35.

Bar Iron.—The market continues in a very depressed condition and with nothing in sight to indicate the probability of early improvement. Large consumers are doing little or no business, so that their requirements are unusually limited. Prices are as unsatisfactory as the demand, although it might reasonably be expected that the troubles of the Pittsburgh firm would lead to some improvement. They have been notoriously cheap sellers. Local manufacturers seem to have had no chance in competition with them, and now that it is shown that business cannot be successfully done at the prices recently accepted, a change for the better ought to be established. Meanwhile there is a disposition to wait the course of events, but the chances are that the extreme low figures of the past three months are not likely to be repeated unless some unexpected reduction can be made in cost of production. Best Refined Bars are quoted at 1.8¢, with still lower figures quoted by some country mills.

Plate and Tank Iron.—The demand is very limited, only small lots being called for, and orders of that class are by no means abundant. Consumption has fallen to a very low point. Shipbuilders, tank-builders, car-builders and others of that class are doing almost nothing, so that it is almost impossible to pick up enough business to keep the mills at work. Prices are about as before, although on the chance of a good-sized order prices would doubtless be shaded a little sooner than risk the loss of a customer. In ordinary cases quotations are about as follows: Ordinary Plate Iron, 2¢; Tank, 2.1¢ @ 2.2¢; Shell, 2.5¢; Flange, 3.5¢; Fire-Box, 4.25¢; Steel Plates, Flange, 3.5¢ @ 3.75¢; Fire-Box, 4.25¢.

Structural Iron.—There is very little new business coming on the market, and the demand has been confined to small lots for immediate delivery. There is a moderate amount of business in prospect, but there is

such a lack of confidence that new enterprises receive very little encouragement at present. Some improvement is looked for toward spring, but in the meantime the outlook is anything but cheerful. Prices are about as last quoted, viz: 2.1¢ for Angles, 2.2¢ @ 2.25¢ for Bridge Plate, 2.6¢ for T's and 3.5¢ for Beams and Channels, subject to the usual discount on large lots.

Sheet Iron.—The demand is about as good as can be expected, considering the season and other discouraging circumstances. Prices are steady, however, although it is probable that concessions would be granted to buyers of large lots. For small lots of best quality Sheets prices are about as follows:

Best Refined, Nos. 26, 27 and 28..... 34¢
Best Refined, Nos. 18 to 25..... 34¢
Common, 34¢ less than the above.
Best Bloom Sheets, Nos. 28 to 28..... 5.5¢
Best Bloom Sheets, Nos. 22 to 25..... 4.5¢
Best Bloom Sheets, Nos. 18 to 21..... 4.5¢
Blue Annealed..... 2.4¢
Best Bloom, Galvanized, discount..... 57½¢
Second quality, discount..... 60¢
Common, discount..... 62½¢

Wrought-Iron Pipe.—As in other departments, a very depressed feeling prevails, and only a small business has been done during the past week. Discounts are unchanged, and in ordinary cases about as follows: Butt-Welded Black Pipe, 45¢; Butt-Welded Galvanized, 30 @ 35¢; Lap-Welded Black, 60 @ 65¢; Galvanized, 40 @ 45¢; Boiler Tubes, 57½ @ 60¢.

Steel Rails.—The demand is not large, and, on the whole, the position remains about as stated in last week's report. Large buyers are holding off in anticipation of lower figures, while manufacturers pursue the even tenor of their way at last week's prices, say, \$28 @ \$28.50 at mill. It is not unlikely that concessions could be had on firm offers for large lots, but at \$26 @ \$26.50, the prices named by buyers, there is no immediate prospect of business being done. Sales chiefly in small lots at the figures above named.

Old Rails.—The demand and supply are equally light, so that only a very limited business has been done. About \$17.50, Philadelphia, would be a fair quotation, although latest sales were at \$18.50 and \$19, delivered at points in the interior.

Old Material.—It is difficult to quote exact prices, as they vary according to quality and delivery. As a rule, seaboard prices are quoted, but in many cases deliveries are made in the interior at about the same figures. Sales as follows: No. 1 Wrought Scrap, \$17.50 @ \$18; Turnings do., \$13 @ \$14; Old Car Wheels, \$15; Old Steel Rails, \$14 @ \$14.50; Spiral Springs, \$14; Fish Plates, 200 tons, f.o.b. cars Hoboken, \$21; Cast Scrap, \$13.50 @ \$14; do. Turnings, \$9.50 @ \$10.

Nails.—Prices are a shade better, although there is no special increase in the demand. Standard makes are quoted at from \$2.05 to \$2.10 for Iron, and \$2.15 @ \$2.20 for Steel.

Pittsburgh.

Office of The Iron Age, 77 Fourth Avenue,
Pittsburgh, Pa., January 20, 1885.

The great event of the past week was the suspension of the well-known Iron firm of Oliver Bros. & Phillips, which for the past few years has been regarded as one of the most active and energetic Iron firms in the country. At the meeting of creditors to-day, the result of which is not known at this writing, a statement will no doubt be submitted that will show the true condition of affairs. In the meantime we refrain from comments upon the imperfect information to hand. The troubles of Oliver Bros. & Phillips has, as might be expected, caused a feeling of distrust, and has been the means of starting rumors affecting the standing of other firms which it is believed have no foundation.

In regard to the labor situation nothing remarkable has developed during the week; reductions are still quite numerous, and, as a rule, the men are submitting, on the principle that a half loaf is better than none. The Oliver Bros. & Phillips trouble has produced one good effect—it has opened the eyes of the ironworkers to the fact that the iron business is very bad. The latter, while conceding that the business was not good, were strongly impressed with the belief that it had been greatly exaggerated by the manufacturers with a view to getting down the cost of labor. Unless there is a very decided change in the iron business for the better in the meantime, the manufacturers are determined the scale with the Amalgamated Association, which expires June 1st, will have to be materially reduced for the year following, and, while the Amalgamated managers do not say much, it is apparent that they have about made up their minds to accept a reduction in the scale, although they say that it is rather early to discuss the matter.

Iron Ore.—The Ore trade, like every other department of the Iron trade, continues very dull, and the outlook is by no means promising for an early business. Consumers are expecting a considerable reduction in the price of Lake Ore this year, as compared with that of 1884, and there is not much doubt but what their expectations will be realized. Advances from the Lake Ore region report that there is little or no inquiries, and thus far there have been no contracts made.

Pig Iron.—The situation remains substantially as reported a week ago; trade continues about as dull as ever. Sales are nearly all small, indicating that consumers

continue to adhere closely to the hand-to-mouth policy. Prices are weak, and within the past two weeks have gone off from 25¢ to 50¢ per ton. We can report sales, mostly, as indicated, in small lots, at \$15.50, cash, for good Neutral Mill Irons, and \$15.75 @ \$16, four months; White Iron, at \$14, cash; Foundry Irons, at from \$16 to \$17.50, cash; Charcoal, at \$23, cash; for Cold Blast, \$22.50, cash; for No. 1, Warm Blast, a lot of close Missouri Hot sold at \$17.50, cash; Bessemer Iron sold at \$17.85 @ \$18, four months. The best city brands of Neutral Mill can now be had at \$15.50, cash, to \$16, four months; we do not know that any of our city furnaces would care to contract for future delivery at the prices quoted, nor are consumers disposed to buy except as their immediate necessities require.

Muck Bar.—There have been no sales reported for some time, in the absence of which we continue to quote nominally at \$27.50 @ \$28, cash.

Manufactured Iron.—Trade in all branches of Finished Iron continues very dull. But very few of the mills are running full, some are still standing idle, and prices are weak and irregular. We continue to quote on a basis of 1.65¢ @ 1.75¢, 60 days, 2¢ off for Bars—that is, for Iron of first quality. It is said that orders are being placed elsewhere on a lower basis than the one we have quoted, but a good quality cannot be bought here below our quotations.

Nails.—There is not much to note of an important character. Trade continues very quiet, but it is expected that orders will commence to come forward more freely next month. Prices remain unchanged at \$2, 60 days, 2¢ off for cash, in carload lots and upward, and 5¢ @ 10¢ per keg additional in a jobbing way. Private advices from Chicago report that an advance of 15¢ per keg has been made in that market. Steel Nails are still being quoted 5¢ @ 10¢ per keg above Iron Nails, but when brought in close competition it is claimed that they can be bought at the price of Iron Nails. There is a good deal of competition between the makers of Steel and Iron Nails; the former are making a strong effort to drive the Iron Nails out of the market, which is being resisted by the latter.

Wrought-Iron Pipe.—The Pipe trade continues dull, as it nearly always is at this season of the year, and no particular activity is expected for some weeks to come. It is probable there will be additional contracts for Pipe for natural-gas companies on the market next month, for the general Pipe trade will not likely amount to much before March. Prices remain unchanged. Discounts on Black Butt-Welded Pipe, 45 @ 45 and 5¢; on Galvanized do., 35¢; on Black Lap-Welded Pipe, 65¢; on Galvanized do., 45 @ 45 and 5¢. Selected Pipe, or Pipe cut to specified lengths, discount 5¢ less than rates quoted. Two-inch Oil-well Tubing, 11¢ per foot, net; 5½-inch Oil-well Casings, 37¢ @ 40¢ per foot, net.

Steel.—The Merchant Steel trade continues much the same as noted for some time past; demand light, while prices are weak, but without quotable change. Refined Cast Steel, 9¼¢ @ 10¢; Crucible Machinery, 5¢ @ 5½¢; Open-Hearth and Bessemer do., 3¢. Steel Nail Slabs are still quoted at \$30, free on cars at works, but some sales have been made as low as \$29 @ \$29.50. The latter is rock bottom, so it is said by those who are in a position to speak authoritatively.

Steel Rails.—There is nothing doing here. The Edgar Thomson Works are still standing idle, and are not likely to be started up until the market improves. It is claimed that Rails ought to bring \$30 on cars in Pittsburgh in order to afford a fair margin for profit, which is from \$2 to \$3 per ton more than can be obtained. Sales have been made by mills at other points at \$29, delivered at Chicago, which would be equal to \$27.50 in Pittsburgh.

Old Rails.—The last sale of Old Iron Rails was at \$9, which appears to be regarded as the ruling price. We can report sales of Old Steel Rails, mixed lots, at \$16.

Railway Track Supplies.—There is some inquiry, but prices are no better and not likely to be soon. We continue to quote Spikes at 2¢, 30 days; Splice Bars, 1.6¢ @ 1.7¢; Track Bolts, 2¼¢ @ 2½¢.

Crop Ends.—Since the stoppage of the Edgar Thomson Rail Mill, Steel Rail Ends have not been so plentiful, but with a light inquiry prices remain as last quoted, \$18; Steel Bloom Ends, \$17 @ \$17.50.

Scrap.—The demand for all kinds of Scrap continues light, but prices, although weak, remain about as last quoted. No. 1 Wrought Scrap, \$16 @ \$17, net ton; Old Car Axles, \$24 @ \$25; Wrought Turnings, \$13 @ \$14; Old Car Wheels, \$15 @ \$16, gross; Cast Boring, \$11, gross.

Window Glass.—There has been nothing important developed recently; business dull, as it nearly always is this month, and the outlook for spring trade is not particularly bright. Discounts remain unchanged, as follows: Single Strength, in car lots, 70 and 5¢; Double Strength, 70 and 10 and 5¢.

Coke.—Blast Furnace Coke continues very dull, but there has been no recent change in price.

Chicago.

Office of The Iron Age, 36 and 38 Clark St.,
Cor. Lake St., CHICAGO, January 19, 1885.

Hardware.—There has been an increased demand in this market during the week. Orders that were placed, however, were not

very large, but embraced in general all classes of goods. Consumption in the retail trade has unquestionably been light, and considerable business has been prevented by the several snow storms and interruption of travel. The market in a general way is quiet but firm, with general expectations of a good trade. Wholesale jobbers in Shelf and Heavy Hardware have been holding their special meetings and resolving upon plans and adopting prices for the spring trade. They start out with the intention of strictly adhering to the prices adopted, and say that concessions from these prices shall not be made with the liberality heretofore displayed by salesmen.

Barb Wire.—Market inactive. Sales, if anything, below the previous week in carload lots, while inquiries have greatly increased. The combination which was formed by manufacturers in St. Louis and vicinity some time ago has fallen through because several parties did not put up their certified checks, which again opens the question of the stability of price. There are plenty of merchants who are ready to place orders for Wire and will do so just as soon as they can rely upon the fact that no lower prices will be made. Manufacturers in Chicago and tributary territory, so far as we can learn, have made no effort to form combination prices, and the market is, therefore, at present weak and somewhat irregular. Nearly all the makers of a particular class of Wire have adopted their own price, regardless of others, and endeavor to sell the Wire upon its merits at the figures, which vary according to the position of the respective mills. In the absence of a settled price, we continue to quote Galvanized, 5¢; Painted, 1¢ less than small trade.

Nails.—The market has undergone a noticeable change during the week past. Makers, sales agents and jobbers who dispose of nearly the entire product of mills in this market have together advanced the price on Nails to \$2.10, 2¢, 60 days, as bottom price on carload lots. Orders at \$2.05—former price—have been uniformly refused by all regular dealers, and all efforts to break the combination have failed. The Calumet Mill refused an order for 10,000 kegs which was tendered at a fraction below the adopted price, while numerous smaller lots were declined by other houses. St. Louis jobbers have not yet made any change, nor, from reliable information, do they contemplate such a movement at present. One or two other jobbing points in the West are figuring on following Chicago jobbers in this matter, but are holding off on account of the undeveloped strength of the demand. From store prices advanced to \$2.15 in small lots, and all dealers assert that they will not depart from this price.

Ore.—Representatives of the various Lake Superior Ore companies are complaining seriously of the condition of the Ore market. Furnacemen are making no contracts, and the business is conducted on the small lot principle, buying being chiefly from week to week. Prices are irregular and weak, with no prospect of the matter being definitely settled for some time to come.

Pig Iron.—The market during the week has been considerably agitated over the failure of Oliver Bros. & Phillips. The small quantity of Iron in most of the furnace yards somewhat allays the fear that it will be the cause of forcing any large blocks upon the market. On Lake Superior Charcoal and Coke Irons the market continues to be regular and steady. While no contracts of importance are being made, there is nevertheless a good trade for the season in carload lots. In Southern Foundry and Mill Irons the market has weakened in the last week. The demand has not been so strong for Foundry Iron as several weeks ago, but the inducements offered on Mill Iron have been productive of three or four good-sized orders in addition to the small trade in carload lots, which has been pretty steady. Two of the sales that have come to notice aggregate about 21,000 tons, delivered at Cincinnati and Louisville, at \$13.25 for two of the brands and \$14 for the others, equal to \$15 @ \$15.75, Chicago. On another lot of 700 tons, delivered at Michigan City, definite figures could not be obtained, but are reported to be in the neighborhood of \$14.50. No. 2 Foundry has also declined from 50¢ to \$1 a ton, according to brand. The best brand of No. 2 would command about \$17, while there are one or two brands on which this price would be refused. There are certainly a number of other brands on which it could be discounted. On Southern Mill Iron \$15 is said to be a fair quotation for Chicago delivery. Southern No. 1 has not been marketed lately, and is said to be steady at quotations, though the difference between one and two is greater than usual. We quote carload lots, four months, as follows: Lake Superior Charcoal, Nos. 1, 2 and 3, \$27.50; Lake Superior Coke, \$20 @ \$21; Cinder, mixed, \$19 @ \$20; Lake Superior and Ohio, mixed, \$20.50 @ \$21; Ohio Standard Black Band, No. 1, at \$21; Southern, No. 1 at \$18.50; No. 2 at \$17; Silvery Soft at \$17.50 @ \$19.50.

Scotch Iron.—No sales to report. We continue our quotations on Summerlee at \$25 cash, from yards.

Merchant Steel.—The demand during the week has not been very great. Buyers are still holding off and waiting for a more definite settlement of price. Numerous in-

quiries continue to be made for delivery later in the season on the regular grade of Steel. Makers of specialties report a pretty fair trade and an encouraging outlook for the future. The local demand from manufacturers and merchants has been a trifle better than the week before, but in other respects the market is unchanged. We continue the following quotations for Best Refined brands from store:

	Per pound.
Best Refined Cast Tool Steel.....	84¢ @ 84½¢
Crucible Cast Machinery Steel.....	84¢ @ 84½¢
Open-Hearth Machinery.....	84¢ @ 84½¢
Bessemer Machinery.....	84¢ @ 84½¢
Open-Hearth Spring Steel.....	84¢ @ 84½¢
Tool-Steel.....	84¢ @ 84½¢
Fire-Box and Boiler Steel.....	84¢ @ 84½¢
Slab Steel, plain.....	84¢ @ 84½¢
Slab Steel, curved.....	84¢ @ 84½¢
Synthetic Steel.....	84¢ @ 84½¢

Steel Rails.—The market remains in about the same position as it was last week. Makers are not striving very hard to obtain orders, and inquiries come in rather slowly. Mills continue to quote \$29 @ \$30 as their lowest price. Several lots, amounting to about 5000 tons, are reported for the week's sales.

Old Rails.—Market less active. Numerous holders having Rails to sell decline to accept the price offered at mill, while others meet the buyer's price. During the week one lot of 1000 tons was bought at \$17, Milwaukee delivery. On another sale of about 10,000 tons \$17.50 was realized, the difference in price being made in consideration of the fact that it was a trade transaction. Dealers continue to ask \$18, cash, shading this figure according to the financial circumstances of sellers.

Structural Iron.—Business is rather quiet. Building operations have been somewhat affected during the week by the recent failure, and investors of capital are inclined to be more slow in placing contracts than they were 10 days ago. The number of estimates which have been on the market for Structural Iron for several weeks has been stayed, and contracts which it was supposed would be awarded by this time have been deferred until later in the month. It is not presumed that this condition of affairs will continue any length of time. We quote: Beams, \$3.60; Channels, \$3.60; T Iron, \$3; Angle Iron, \$2.50; Flitch Plates, \$2.50; Frieze Plates, \$2.70; ¼¢ @ ½¢ is added for delivery from stock.

Bar Iron.—Quite a number of good-sized orders were placed during the early part of the week, when the market presented a very favorable appearance. The general impression among makers and dealers is that the misfortune of Oliver Bros. & Phillips is more likely to have a tendency to improve the market than depress it. Their assignment is given as evidence that Iron has been sold at less than cost, and that this state of affairs cannot exist without inevitable ruin. Whether it will improve the condition of trade or not remains to be seen. It is certain that it has not thus far created an unfavorable impression in the trade. We quote at \$1.80 rates on Best Refined Pure Puddled Iron from store. Mill price in carload lots, \$1.70 @ \$1.75, according to specifications. For common Iron \$1.50, f.o.b., is regarded as a fair quotation from mill, and from store, \$1.70 @ \$1.75.

Norway Bars.—We continue to quote Norway Bars to local trade at \$4 rates, and to merchant trade in carload lots at \$3.75. The latter price prevails more extensively outside of the city, where strong competition exists between several of the Eastern houses.

Galvanized Iron.—Market quiet and buying slow and irregular. The demand is exceedingly light, and when an opportunity offers to place an order manufacturers who have stocks do not hesitate to make concessions if there is a possibility of obtaining a contract. In a general way concessions seem to be growing more prevalent, and lower prices are predicted by jobbers before the close of the month. We continue to make the following quotations as jobbers' price from store: Juniata, 57½ discount. Charcoal, 60¢ discount, and Refined, 62½¢ discount from list.

Black Sheets.—No demand in carload lots or such quantities as would form a fair basis for a quotation. There is a dribbling trade in small lots to dealers and consumers for Stove-Pipe and a few other makes, but the market is generally regarded as dull and prices very weak. In the absence of further information we renew the following quotations on Best Refined grades from store: Nos. 8 to 14 at \$2.50 @ \$2.60; Nos. 15 to 17 at \$2.80 @ \$2.90; Nos. 18 to 20 at \$2.80 @ \$2.90; Nos. 22 and 24, \$2.80 @ \$2.90; Nos. 25 and 26, \$2.90 @ \$3; No. 27, \$3 @ \$3.10.

Old Wheels.—There are several large lots of Old Wheels in the market which have been offered without obtaining a purchaser. Holders are now asking \$16 @ \$16.25. Buyers have receded in price in almost the same proportion, and foundrymen who were willing to pay \$15 a week ago have fallen off to \$14.50, while on choice lots \$15 might be obtained.

Scrap Iron.—Prices on Scrap Iron at mill have gone off about 50¢ per ton during the past week. No. 1 Mill Scrap, Milwaukee delivery, is quoted \$14 @ \$14.50, and No. 2 at \$9 @ \$9.50. The quantity of Scrap obtained at these prices comes largely from the Northwest, and, if shipped from that point to Chicago, would be worth about 50¢ a ton less, which is about the cost of shipping between the two points. It might be possible to obtain 25¢ @ 50¢ advance on these figures

from mills in Chicago for Select Scrap, but the quantity in demand is so small that a price could not be arrived at with any certainty. No. 1 Forge is firmer and might be fairly quoted at \$17 @ \$17.50, consumption being considerably less than for Mill Scrap. As dealers' purchasing price we quote the following: No. 1 Wrought Scrap, 1/2 net ton, \$13.50 @ \$14; Cast Scrap, 1/2 net ton, \$11.50 @ \$12; No. 1 Stove-Plate Scrap, 1/2 net ton, \$8; Wrought Turnings, 1/2 ton, \$10; Cast-Iron Borings, \$6; Old Plow Steel, \$9; Tool Steel, 1/2 ton, \$15; Locomotive Steel Tire, 1/2 net ton, \$12; Buggy Springs, 1/2 net ton, \$14; Malleable Scrap, \$6.

EVERETT & Post, 156 Lake street, Chicago, report to us as follows, under date of January 19, 1885: Pig Lead.—The position of Pig Lead during the past week has been one of quietness as to the West, with values nominally \$3.50 @ \$3.55. We hear of but few transactions for local consumption, although quite large sales are reported in New York for Eastern consumption. The quantity of Lead offering is not large, yet ample to supply present requirements. Manufacturers here are still holding off, waiting for developments in trade.

Chattanooga.

Office of The Iron Age, Carter and Ninth Sts., CHATTANOOGA, January 19, 1885.

The heavy and continuous rains of the past week have caused a large falling off in local trade, but they have caused a big rise in our river, which has brought in immense quantities of logs and lumber, and our lumbermen and mills are active, and a few large contracts have been made to go to distant points. The steamboat business is booming, and large quantities of produce from Eastern Tennessee and Northern Alabama are finding their way through the city to points further South.

Pig Iron.—Has continued active, and sales to Southern foundries have kept up remarkably well; prices have undergone no change, but are well maintained. The Citico Furnace will probably commence turning out Iron on Monday, which will add to the product of the district about 100 tons per day. An offer of this make for 10,000 tons of Gray Forge has been made at present ruling prices, but has been declined, the owners being of the opinion that better prices will rule as the spring advances. A further reduction on freight to New York, Boston, Philadelphia and Baltimore has been made, and it is now \$3.75 per ton to these points. This has had the effect of stimulating inquiries from these points, and some sales have been made at \$15.50, delivered, for Gray Forge. A rather noticeable feature of the trade at present is a disposition on the part of some buyers who are not consumers to make contracts for future delivery of round lots of 5000 to 10,000 tons. Prices certainly cannot go down, and nothing can be safer for parties who have a surplus of money than to put it in Pig Iron, and consumers who are confident that they will require it cannot go astray by contracting for their future wants.

Hardware.—The trade continues brisk, and the near approach of spring has caused the farmers to begin to lay in their stock of utensils for the spring work. This interest has increased very materially during the present winter by numbers of Northern farmers purchasing tracts of land in this vicinity, with a view of going into the farming business.

Bar Iron.—The demand for Bar has increased considerably, and the mills at Knoxville and Birmingham are running full. They have had no trouble with their workmen, who have appreciated the situation and readily consented to such reductions as have enabled the owners to offer to the trade a continued supply of assorted sizes at \$1.70 rate.

Old Rails.—Sales continue at about \$16, and there is an increased inquiry. Scrap of all kinds is, however, neglected, with the exception perhaps of Old Wheels, of which some sales have been made at \$12.50 @ \$13.

Railroad Fastenings.—Continue to rule at past prices, with increased inquiries, some of which are from the far West.

Coal and Coke.—There is nothing new to report in this department; all of the mines are running full, and some are constructing more ovens for an increased output of coke; some of our furnaces are turning on to Coke in place of Charcoal.

Ores.—We have nothing new to report, as furnaces are well supplied for the future.

Cincinnati.

JANUARY 19, 1885.—Pig Iron.—The slight increase in inquiry and small orders give a little better tone to business, but prices remain flat. The large production in Virginia, Tennessee and Alabama enables the brokers to continue offering any amount of Foundry grades for scattered deliveries and at prices that secure the orders to the extent of the needs for the kinds. The Hanging Rock brands are held firmly at prices slightly higher than the Southern, but it is reported that they are being liberally taken for tempering a mix. Quotations:

CHARCOAL FOUNDRY.		
Hanging Rock, No. 1.....	\$31.00 @	\$31.50
Hanging Rock, No. 2.....	19.50 @	20.50
Tennessee and Alabama, No. 1.....	19.00 @	19.25
Tennessee and Alabama, No. 2.....	17.50 @	18.00

COKE FOUNDRY.		
Ohio and Pennsylvania, No. 1.....	19.00 @	19.50
Ohio and Pennsylvania, No. 2.....	17.00 @	18.00
Virginia, Alabama and Tennessee, No. 1.....	17.00 @	18.00
Virginia, Alabama and Tennessee, No. 2.....	15.50 @	16.00

No sales Scrap reported.

St. Louis.

HOFFER & Co., of St. Louis, report to us as follows, under date of January 19, 1885: We have no change to note, and prices remain as we last reported:

HOT BLAST CHARCOAL IRONS.		
Missouri.....	\$16.00 @	\$17.00
Southern.....	16.00 @	17.00
Ohio.....	30.00 @	32.00

COAL AND COKE IRONS.		
Missouri.....	16.00 @	17.00
Southern.....	15.00 @	16.00
Ohio.....	30.00 @	32.00

MILL IRONS.		
Red-short.....	15.50 @	16.00
Neutral.....	14.00 @	16.00

CAR WHEEL AND MALLEABLE IRONS.		
Missouri.....	18.00 @	20.00
Southern.....	23.00 @	27.00
Ohio.....	30.00 @	30.00

SCRAP.		
Rails.....	18.00 @	20.00
Wheels.....	16.00 @	20.00
Wrought.....	30.00 @	30.00
Cast.....	30.00 @	30.00

Baltimore.

R. C. HOFFMAN & Co., Pig and Railroad Iron Merchants, No. 21 South Frederick street, write as follows, under date of January 19, 1885: The Iron market remains dull and quiet. Sales light and for immediate use only. We quote:

Baltimore Charcoal Wheel Iron (all)		
Baltimore.....	\$28.00 @	\$29.00
Virginia Cold-Blast Wheel Iron.....	28.00 @	29.00
Antietam, No. 1.....	19.00 @	20.00
" No. 2.....	17.00 @	18.00
" No. 3.....	15.00 @	16.00
" Mottled and White.....	13.00 @	14.00
Charcoal C. B. Blooms.....	45.00 @	50.00
Refined do.....	37.00 @	40.00

Louisville.

W. B. BELENAP & Co., Iron and Steel Merchants, Nos. 115 to 121 West Main street, Louisville, under date of January 19, 1885, report as follows: At last we are able to report an improved tone to the market. Inquiries are frequent and for large amounts, while orders, too, are much more numerous in their proportions and for well-assorted lots. The upward movement started in Nails; all classes of buyers seemed struck at once with the conviction that they were good stock to have and to hold. The re-establishment of confidence is retarded by the numerous and heavy failures—445 is the record for last week, in connection with 448 the week previous, making a serious aggregate that may well give us pause. The method often pursued of assignment to parties directly or indirectly interested, with frequently large preferences, is too common for the comfort and welfare of creditors. Some better scheme must be devised than that the creditor should provide living and profit for an indefinite period for an assignee and his friends. The Oliver failure at Pittsburgh has overshadowed all others in magnitude and interest, the Oliver having been prominent in politics as well as in trade.

Bar Iron.—The first result of the spring trade was felt here this week, and jobbing orders have been of fair proportions. So many of the mills are closed it is no easy matter to get an assorted order of 200 or 300 tons filled promptly. Some of the older concerns promise not to start up till 1 1/2 rate at the mill can be obtained. That day does not seem to be immediate. If it is near by, we may look to see labor and raw material recover some of their lost ground. Hoops and Bands are slightly better, as distillers are calling for more coverage. Sheet Iron.—There is more movement in Sheet than usual at this season. Prices are firm. Steel.—Agricultural Steels and Shapes are extremely active. Some makers have advanced prices 1/4 @ 1/2 without losing any orders thereby. Thos. Meika & Co., Plow and Steel Shape Manufacturers of this city, say that goods contracted for delivery February 1 and 15 are being telegraphed for daily, and they are running overtime to fill orders. Nails have experienced this week a positive boom. Orders have poured in at such a rate and for such volume that an advance of 10¢ has been established, and, owing to the stiffness of the mills, it promises to be readily maintained. Both Riverside and Bellaire Mills, who chiefly supplied Steel Nails to this market, are closed down by strike and are taking no orders for future delivery. General Hardware.—It is an uneventful week now that does not give us a new screw list. The Dayton Screw Company strikes out on an independent sheet, and issues one at low figures and a light discount. The bewildered recipient of these various and varied favors may well exclaim, "A plague on both your houses!" It is certainly due the trade that these differences—which are not really of price, but only of list and discount—be adjudged, and that right speedily.

Note.—In our table of comparative prices last week, Strap and T Hinges should have read 60, 10 and 10 1/2, instead of 70, 10, 10 1/2. The item Washers should have read 80 much off list, not, as one might infer from the table, so much per pound.

GEORGE H. HULL & Co., of Louisville, report to us as follows, under date of January 19, 1885: The market is quiet and shows no signs of improvement in prices. Very few buyers are as yet commencing to

take hold for their spring supplies, but the outlook is favorable, and we expect better trade soon:

Pig Iron.		
Southern Coke, No. 1 Foundry.....	\$17.00 @	\$17.50
Hanging Rock Coke, No. 1 Foundry.....	16.00 @	16.50
Hanging Rock Charcoal, No. 1 Foundry.....	17.00 @	18.00
Southern Charcoal, No. 1 Foundry.....	21.50 @	22.50
Silver Gray, different grades.....	14.50 @	15.00
Southern Coke, No. 1 Mill, Neutral.....	13.50 @	14.00
" No. 2.....	13.00 @	13.50
" No. 3.....	13.00 @	13.50
Southern Charcoal, No. 1 Mill.....	16.00 @	17.00
White and Mottled, different grades.....	12.00 @	13.00
Southern Car Wheel, standard brands.....	25.00 @	26.00
Southern Car Wheel, other brands.....	21.00 @	22.00
Hanging Rock, Cold-blast Charcoal.....	25.00 @	26.00
Alabama Warm-blast.....	20.00 @	21.00
Alabama Warm-blast.....	21.50 @	22.00

Imports and Exports.

IMPORTS.

The following were the Imports of Hardware, Iron, Steel and Metals into the Port of New York for the week ending Jan. 21, 1885:

Hardware.	
Appleton Arthur, Machinery, case, 1	
Bergens, C. C. Machinery, case, 1	
Boker Hermann & Co. Hardware, cutlery, and guns, pkgs., 29	
Boker Carl F. Mds., case, 5	
Clark G. A. & Bro. Machinery, case, 1	
Curley J. & Co. Case, 1	
Fiebert Alfred & Co. Cases, 7	
Mds., case, 9	
Graef Cutlery Co. Cases, 4	
Gurney Fred. D. B. Cases, 2	
Hoe R. & Co. Mds., case, 1	
Johnson John & Co. Machinery, case, 1	
Kursheed Mfg. Co. Machinery, pkg., 1	
McCoy & Saunders, Packages, 2	
Moore's Sons J. P. Mds., case, 4	
Pengot, Cases, 3	
Russell Thos. & Co. Machinery, case, 1	
Schovring Daily & Gales, Case, 1	
Sellers W. B. Cutlery, case, 1	
Taylor Thos. Cases, 2	
Thorn, W. & Co. Case, 1	
Volsin Stevens, Machinery, case, 1	
Walker E. F. Hardware, case, 1	
Wiesch, H. & Co. Hdw. and cutlery, pkgs., 118	
Chains, cks., 20	
Witte, John G. & Bro. Cutlery, case, 5	
Order.	
Cases, 12	
Machinery, box, 1	
Machinery, case, 5	
Ironware, case, 1	
Nails, kegs, 100	
Abbott J. & Co. Sheets, 21	
Baring Bros. & Co. Wire rods, coils, 17-	
Phelps, Dodge & Co. Tin plates, bxs., 50	
Tin plates, bxs., 50	
Black taggers, bxs., 100	
Pizza D. M. & Co. Order.	
Tin plates, bxs., 13,744	
Antimony, cks., 75	
Billiton tin slabs, 300	
Banca tin slabs, 300	

The imports of Cutlery, Hardware and Metals at this port during the week ending 16th inst. were as follows:

Quantity.	Value.
19	\$97
31	3,459
1	1,116
37	1,116
17	1,116
97	34,535
11	11,504
11	624
49	13,021
18	1,523
977	1,832
22,176	13,781
1,516	55,374
90	7,993
265	29,212
15	6,722
2	225
361	861
11	941
150	1,439
3	3,782
4	139
117,367	137,914
32,105	128,795
3,457	10,114
1,613	4,108
1,272	69
50	465

The comparison with previous dates is as follows:

For the week.	3 weeks.	Same time 1884.
97	255	831
11	46	33
1	2,953	6,786
177,309	154,023	30,300
32,105	128,795	37,368
1,516	897,698	109,917

EXPORTS.

The following list embraces the Exports of Hardware, Machinery, Iron, Metals, &c., from the Port of New York, for the week ending January 20, 1885:

Danish West Indies.	
Quan. Val.	
Hdw., pkgs., 2	\$15
Pump, gals., 35	205
Mf. iron, pkgs., 37	244
Nails, kegs., 10	26

CHARCOAL FOUNDRY.

Hanging Rock, No. 1.....

Hanging Rock, No. 2.....

Tennessee and Alabama, No. 1.....

Tennessee and Alabama, No. 2.....

Santo Domingo.	
Quan. Val.	
Ptms., gals., 14,310	1,012
Saw, ma., case, 6	146
Iron safe, case, 1	30
Tin plate, case, 4	48
Car wheels, case, 12	125
Hdw., pkgs., 17	176
Nails, kegs., 73	213
Br. d's, case, 1	87
Nails, case, 8	65
Tinware, case, 7	225

Central America.	
Quan. Val.	
Cartridges, case, 26	594
S. m. needles, case, 2	15
Mf. iron, pkgs., 139	74
Alm., gals., 624	70
Nails, kegs., 34	229
Saw, ma., case, 36	394
Shot, bxs., case, 3	32
Clarks, case, 1	8
Ruffs, case, 21	3,121
Bayonets, case, 3	230
Hdw., pkgs., case, 36	438
Cutlery, case, 6	186
Zinc, case, 1	32
Mach'y, pkgs., case, 2	38
Ag. imp. pkgs., case, 1	8
Tinware, case, 1	8
Y metal, case, 3	155
Steel chains, case, 1	30
Saw, ma., case, 1	85
Jaws, harps, case, 1	20
Case, case, 1	85

Venezuela.	
Quan. Val.	
Ptms., gals., 4,359	542
Clarks, case, 4	84
Solder, case, 1	50
Nails, case, 1	20
Cutlery, case, 1	20
Spikes, kegs., case, 12	130
Hdw., case, case, 34	573
Mach'y, pkgs., case, 53	2,673
Mf. iron, pkgs., case, 262	1,512
Saw, ma., case, case, 39	1,561
Calars, bbs., case, 6	145
Scales, case, case, 2	63
Iron safe, case, case, 1	60
Iron, pkgs., case, case, 87	87

Porto Rico.	
Quan. Val.	
Mach'y, pkgs., case, 10	370
Nails, kegs., case, 40	99
Ag. imp. pkgs., case, 18	18
Tinware, case, case, 1	9
Mf. iron, pkgs., case, 26	511
Clarks, case, case, 3	125
Hdw., case, case, 1	8

Brazil.	
Quan. Val.	
Ptms., gals., 19,224	10,458
Mf. iron, pkgs., case, 61	339
Stapledware, case, case, 21	747
Mach'y, pkgs., case, 5	493
Cutlery, case, case, 6	1,484
Steel, bbs., case, 10	75
Saw, ma., case, case, 22	329
Iron, case, case, 50	235
Ag. imp. pkgs., case, case, 67	67
Hdw., case, case, 100	1,063
Iron, pkgs., case, case, 57	125
Nails, kegs., case, case, 25	71
Tacks, case, case, 4	153
Pumps, case, case, 7	220

Trinidad.	
Quan. Val.	
Copper, cakes, 113	2,370

United States of Colombia.	
Quan. Val.	
Clarks, case, case, 11	353
Cartridges, case, case, 12	344
Ag. imp. pkgs., case, case, 23	605
Nails, kegs., case, case, 24	113
Pumps, pkgs., case, case, 5	383
Anchor, lot, case, case, 1	346
Wire, case, case, 6	75
Wire cloth, case, case, 15	507
Copper, case, case, 5	922
Ptms., gals., case, case, 897	1,329
Ag. imp. pkgs., case, case, 186	2,556
Mach'y, pkgs., case, case, 118	4,446
Saw, ma., case, case, 25	655
Babbitt metal, case, case, 2	53

French West Indies.	
Quan. Val.	
Ptms., gals., 15,250	1,530
Clarks, case, case, 12	344
Ag. imp. pkgs., case, case, 23	605
Nails, kegs., case, case, 24	113
Pumps, pkgs., case, case, 5	383
Anchor, lot, case, case, 1	346
Wire, case, case, 6	75
Wire cloth, case, case, 15	507
Copper, case, case, 5	922
Ptms., gals., case, case, 897	1,329
Ag. imp. pkgs., case, case, 186	2,556
Mach'y, pkgs., case, case, 118	4,446
Saw, ma., case, case, 25	655
Babbitt metal, case, case, 2	53

Copper, pkgs. 397	5,649	Mf. iron, pkgs 29	511
<i>Newfoundland.</i>		Clocks, cs.	3 125
Mf. iron, pkgs. 9	(8)	Hdw., case	1 8
		<i>Brazil.</i>	

Handle Company, whose factory is located at Greensboro, N. C., has issued, under date January 1, a convenient and comprehensive price list of the Handles and Spokes of which he is the manufacturer. In his preface he mentions that, his facilities for manufacturing these goods having been largely increased by means of added machinery and access to new fields of timber, he is enabled to offer to the trade, as shown in this list, many new patterns suited to domestic and foreign markets. The goods made by him have "North Carolina Handle Company" stamped on each case. He is also prepared to furnish Hickory, Oak and Ash Plank in carload lots. The catalogue exhibits complete lines of the goods to which it refers, with illustrations of the different styles. The table of Shipping Weights, and of Measurements and Weights of Handles in Cases will be of use to the trade. The catalogue includes also list prices of the Washoe Solid Punched Adz Eye Tools, which are illustrated in it.

THE WILSON MFG. CO.

New London, Conn., are about to issue the following discount sheet, which applies to their catalogue of 1884 and 1885:

	Dls. per cent.
Coffee Mills—change list.....	40
Box Mills.....	40
Nos. 352 303 304 3 4 5 6	
\$9.50 9.00 8.50 8.00 7.50 7.00	
Side Mills, No. 0.....	\$5.50
Solid Box Mills—change list.....	50
Nos. 25 30 35 40 45 50	
\$11.00 10.50 10.00 9.50 9.00 8.50	

	Dls. per cent.
Vise Boxes and Screws—change list.....	20
Nos. 10 12 14 16 18 20	
\$3.00 2.80 2.60 2.40 2.20 2.00	

	Dls. per cent.
Full Bench Vises, No. 00, \$2.50—change list.....	55
Parallel Bench Vise Nuts.....	55
Coachmakers' Vises.....	50
Coopers' Vises.....	40
Cutlery Vises.....	40
Cotton Samples.....	45
Coin Scales.....	50
Tobacco Cutters.....	55
Gridirons.....	65
Geared Braces.....	80
Drill Stocks and Bows.....	80
Breast Drills.....	80
Bench Screws (Wood Handle).....	50
Bench Screws (Iron Handle).....	50
Clamp Heads.....	40
Lathe.....	30
Lathe Wheels.....	30
Lathe Pulleys, Hangers and Shaft.....	80
Hot-House Pulleys.....	55
Sliding Door Pulleys.....	55
Sliding Door Rail.....	56
Shutter Slaves.....	30
Casters.....	45
Sash Rollers.....	50
Side Pulleys.....	50
Upright Pulleys.....	45
Frame Pulleys.....	45
Axle Pulleys.....	50
Bit Holders.....	35
Coopers' Cross Tools.....	55
Shutter Screws.....	55
Stubs and Plates.....	55
Shutter Lifts.....	55
Box Chisels—change list.....	55

	Dls. per cent.
Jack Screws (Bell Bottom).....	40
Jack Screws (Wrought-Iron Barrel).....	35
Jack Screws (Straight Barrel).....	50
Jack Screws, Locomotive.....	40
Car Box Jack Screws.....	50

	Dls. per cent.
Jack Screws (Bell Bottom).....	40
Jack Screws (Wrought-Iron Barrel).....	35
Jack Screws (Straight Barrel).....	50
Jack Screws, Locomotive.....	40
Car Box Jack Screws.....	50

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Jack Screws (Straight Barrel).....	50
Jack Screws, Locomotive.....	40
Car Box Jack Screws.....	50

Pew Door Butts..... 30
Metal Sheaves..... 30
Lignumviter Sheaves..... 30
Blockmaker's Rivets..... 30
Block Pins..... 30
Mast Hoop Forelocks..... 30
Pump Chambers..... 30
Clothes Line Pulleys..... 30
Clothes Line Pulley, "Chaney's"..... 30
Quarter Blocks..... 30
Derrick Blocks..... 30
Wharf Blocks..... 30
Iron Strapped Blocks..... 30
Rope Strapped Blocks..... 30
Snatch Blocks..... 30
Cotton Hooks..... 30
Box Hooks..... 30
Hay Hooks..... 30
Burglar and Trap Sleepers—change list, No. 5..... 30
Tuyere Irons..... 15
Lathe Chucks..... 15
Mowing Machines and extras..... Net

In the same circular they call attention to Chaney's Improved Clothes Line Pulley, which is made of galvanized malleable iron, and to whose cheapness, durability, utility, convenience and strength they allude. They state that the peculiar construction of the Pulley enables them to use a larger pin for the sheave to run on than is used in any now on the market, and that the space for the rope is also very wide, allowing a knot in any ordinary clothes line to easily pass through. They make the further points that its use secures a great saving in the wear of lines, and that it will not clog up with ice in winter. It is sold complete at \$2.25 per dozen, or without screw-eyes at \$2 per dozen, subject to the discount above mentioned of 40 per cent. They also issue the following notice to the trade:

NEW LONDON, CONN., January 13, 1885.

To the Hardware Trade: We have this day withdrawn our agency from Messrs. Bates, Wilson & Co., of 294 Broadway, and have appointed Mr. Frank Baldwin, 33 South street, our agent for the sale of our goods in New York and vicinity. He will carry a full line of Solid Box Wrought Iron Vises, Bench Vises, Jack Screws, Lathes, Coffee Mills, Well Wheels and all Hardware goods made by us. He will at all times be able to quote factory prices and fill orders promptly. Yours very respectfully,

THE WILSON MFG. CO.

From an enterprising and well-known Hardware house in Michigan we have received the following communication with reference to their method of

HANDLING DRY PAINTS.

In addition to the cuts, Nos. 1 and 2, which are given herewith, they have sent us a sketch showing that the entire length of the construction is 14 feet, and indicating the sizes of the cases in the different rows, as follows: The first or bottom row has five cases 19 inches wide and five cases 13½ inches wide; the next or middle row has 12 cases 13½ inches wide, and the top row has eight cases 9 inches wide and 12 cases 6½ inches wide. From our correspondent's letter it will be seen that these sizes are referred to as desirable for the cut-

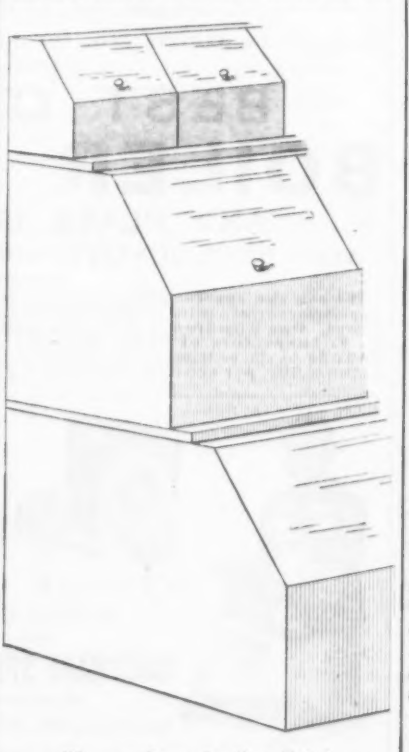


Fig. 1.—Cases for Dry Paint.

ting of the Tin without waste; but, of course, they can be readily changed to suit the convenience of any who may be disposed to follow the general plan:

To the Editor of The Iron Age: I have seen several communications in your paper asking for suggestions with reference to the arrangement of Hardware stores. We have an arrangement for keeping dry paints, the convenience of which almost surprised us when we had it made. As most Hardware dealers keep paints and oils, we feel certain that a knowledge of how the thing is done will be of interest to them. We made the cases of tin—a cheap grade of IX tin, 20x 28, is good enough—double-seamed together, and having the opening for the hinged cover wired with No. 8 wire. The covers are hinged at top, thus lifting up and dropping back against the tier of cases overhead. The cases are made in different sizes, but all so as to cut from above sizes of tin to advantage. On the top of the lower tier of cases an inch board about 14 inches wide is placed, and above this the second tier of cases. Over this again is placed a board about 7 inches wide, and on this a third and upper tier of cases. We placed the lower tier about 8 inches from the floor. With a small table and scales in front of these cases we are able conveniently to handle all dry colors, wall tints, &c. It will be perceived that these cases are conveniently constructed to put goods in and take them out, as those above cannot be opened until those below are closed, so there is no danger of getting

the colors mixed by dropping one into the other. These cases can be painted any color desired. We have soldered cleats on the front of the cases to slide a card in for a label. We like this better than painting the label on the case, as it facilitates making changes if we desire. If there is not room for a 14-foot row of cases, any length can be used but the size of the cases cannot be deviated from much without cutting the tin to bad advantage. Any tinsmith can make these cases and during the dull times this winter is the time to do it, that the store may be ready for the spring trade. After they have been used one season ten times the cost would not induce the merchant to

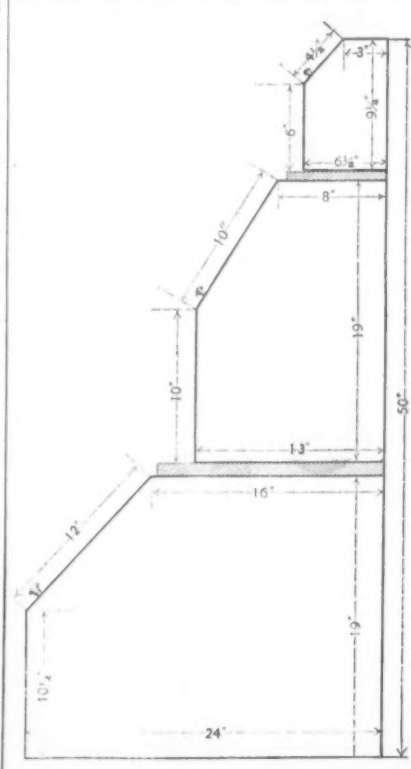


Fig. 2.—Sectional View, with Measurements.

go back to barrels, kegs, cases, sacks, &c. The cost of these cases which we have described was as follows:

¾ box roofing tin, at \$12.....	\$9.00
5 days' work tinsmith, at \$2.....	6.00
25 feet 1-inch lumber, at \$10.....	25.00
6 pounds No. 8 wire, at 5 cents.....	30
42 1-inch shutter knobs, at 1 cent.....	42
Total.....	\$15.97

Very truly yours, S.

THE MILLER LOCK COMPANY,

Philadelphia, in the list which they have recently issued, incorporate the additions to the line of their manufactures which they have made since their last list was published, viz., the Champion Six-Lever Night Latch, which is very satisfactorily exhibited with a sectional cut showing the parts in place and the manner in which it is attached to the door; also the Cash or Dead Box of which we gave a description some time ago. It also contains a description, with price list, of their Champion Store Door Dead Lock, which they have just put on the market. This is a six-lever upright rim store-door Dead Lock adjustable to right or left hand doors from 1¾ to 3 inches thick, operated by key from outside and by knob from inside the door. The case is japanned iron 2½ x 4 inches, the bolt bronze, 2 x ¾ inch. Each Lock is packed in a paper box, with three steel keys, complete fittings and directions for putting on. There are six tumblers in each Lock, thus giving a great number of changes, and no two will pass the same key unless made to order. The list is as follows:

No. 646, with Plain Bronze Escutcheon.....	Per doz. \$30
No. 647, " Nickel-Plated.....	30

The above prices are subject to a discount of 40 per cent. The same discount is given on their Night Latches, but on all the rest of the goods the discount is 33½ per cent. In their introduction the manufacturers call attention to the special features of their Locks, referring especially to their security and the simplicity and neatness of the mechanism. The list will be of interest to the trade.

We are in receipt of a copy of an address made by

JOHN H. PARKS,

who is well known to many of our readers as a prominent business man of Boston, and occupying an important position in the Tack market. The address was delivered at the monthly dinner of the Trade Club, and is an able and forcible argument for the protection of American manufactures and the extension of our commerce. It is of value for its succinct history of tariff legislation, and the facts and figures upon which the speaker's argument is based. We take pleasure in laying before our readers the following extracts from the address, the whole of which we are unable to reproduce:

In 1861 we made an increase of tariff to an average of 33 per cent.; thence by successive steps to 50 per cent. in 1864, since which time there have been numerous reductions, until now the average is from 40 to 41 per cent. In the 24 years since 1860 we have changed the ratio of imported manufactured goods from 60 to 10 per cent., and we are now the greatest manufacturing country on the face of the globe. Our internal commerce has become enormous—estimated at some \$20,000,000,000 per annum. Our foreign commerce, though far from being so large, is still very great, aggregating as it does \$1,400,000,000 annually, with the balance of trade in our favor. Our accumulated wealth is prodigious, being \$44,000,000,000, as against \$14,000,000,000 in 1860, and as against \$42,500,000,000, the

accumulated wealth of the United Kingdom, according to the last official report. Our population has increased at the rate of 1,500,000 to 2,000,000 a year, until today we stand a nation with upward of 50,000,000 people, soon to be 60,000,000, 80,000,000, 100,000,000. From all sides the poor and the needy of other lands flock into our borders at the rate of 40,000 a month for the rewards they can get for their services in no other country. The great bulk of these immigrants soon become thriving, self-supporting citizens. All help to enhance the value of our rapidly growing home market. The public debt of our civil war is rapidly being redeemed, and, to crown all, the public treasury is filled to overflowing with a surplus which we are embarrassed to expend with wisdom; and, not only this, we are perplexed to select objects to exempt from import which shall not result in the injury or destruction of some but partially established home industry. It is true that this country would continue in good credit for some years without a protective tariff because of its accumulated capital, but sooner or later disaster would come to it as surely as to any financial institution whose outgoes should constantly exceed its income. And with a lessened income to our Government must come restriction in its expenditures for internal improvements, rivers, harbors, canals and public institutions. Certainly this is not desirable. How much better is a surplus of revenue than a deficiency, whether to a government, corporation or an individual.

But it will be said if the tariff is so great a blessing, so great an advantage to the American people, why this widespread depression in business? The tariff does not seem to make business always good, trade always active and profits always satisfactory. True; but we are so much better off than other nations in this respect that trade is good with us, in comparison with foreign countries, if all the accounts we read are true. But the fact that a business depression does exist here, and to so wide an extent, seems to me the most conclusive reason why we should not admit new competitors to this field to make matters worse than they are. The depression from which we are suffering does not arise from any lack of abundance in our material stores, but from an overproduction of many articles we raise or manufacture and an underconsumption of many others. It is easy to see how we can produce more articles of Hardware, tons of coal and bushels of grain than are required by the needs of our people, for the consumption of such articles is not so much a matter of economy.

On the other hand, a less number of boots and shoes and yards of cloth may be produced than are actually required by the demands of comfort on the part of our people, and yet every manufacturer of such articles in this country may have his factory overstocked with goods he cannot sell. The consumption of these articles is strictly a matter of economy. It depends upon whether the people as a whole are profitably employed, and upon the extent of their confidence in the stability of public affairs, which leads them to buy one, two or three pairs of boots or shoes, or suits of clothes or garments, in the course of a year. If one quarter of our people economize to the extent of one pair of boots or shoes, or one suit of clothes or one garment in the course of the year, no matter how much they need new, it means 14,000,000 of such articles not sold by the manufacturer. Now certainly it will not help us to overcome the evils of such overproduction and underproduction to open our market to the admission of new competitors, producing goods under conditions of cost, particularly as to labor, so much more favorable than our own manufacturers. I believe we had much better scrutinize our list of imports to-day to see if there are not some goods being now brought into our country that can as well be produced here at home; and, if so, I would advocate an advance of the tariff on such articles that we may save the money to our own manufacturers which is now being sent abroad to pay for such goods.

Rich as we are in our land, our mines, our industries, our people and our revenue, we are yet dependent upon foreign countries for many of the articles we consume. We never shall be wholly independent until our resources are developed to that extent when everything essential to human life can be produced within

L. COES'
Genuine and Mechanics,
PATENT
Screw Wrenches
MANUFACTURED BY
L. COES & CO.,
Worcester, Mass.
ESTABLISHED IN 1839.




Our Genuine Wrenches are made with straight bars, full width and enlarged jaw, having ribs cast inside, which strengthen the jaw and give a full bearing on front of bar. These improvements, in combination with our new ferrule, made with double bearings, an iron tube, fitted to the shank and resting against the lower bearings, rigidly held in position by the handle and nut, effectually preventing back thrust of ferrule (see sectional view), verify our claim that we manufacture the heaviest and strongest Wrench in the market. None genuine unless stamped

L. COES & CO.,
Worcester, Mass.
Warehouse,
97 Chambers and 81 Reade Sts.
NEW YORK.
DURRIE & McCARTY,
Sole Agents.

THE BEST COMBINATION
RAZOR STROP.
"THE LAMOILLE."

On which more money can be made by the Retail Dealer than on any other Strop.

PRICE PER DOZ., - - - \$3.50.
PRICE PER GROSS, - - - 38.00.

Special Price Given on 5-Gross Lots.

ADDRESS

Lloyd & Supplee Hardware Co.
PHILADELPHIA.

The F. F. ADAMS COMPANY, Erie, Pa.
THE LATEST THING OUT.



The Cyclone Mouse Trap.

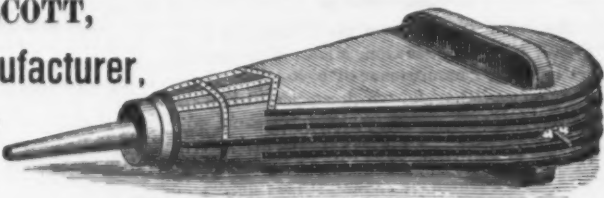
We invite the attention of dealers to this "Novelty" in Mouse Traps. Patented Nov. 5, 1884, and now having an immense sale. It is clean, durable and attractive, and so sensitive that the mouse who ventures to but touch his nose to the bait box is doomed. Our salesmen on the road say it is the most popular Trap ever offered to the trade. One of our men in a single short trip sold 5000. The retail price is only 10 cents each, and yet they afford big profits to the dealer. We will send a sample by mail for inspection, upon receipt of five 2-cent stamps. Send for our Illustrated Catalogue.

IDEAL MOUSE TRAP.

So perfectly simple in construction there is nothing to get out of order, as is the case with all other traps made on this principle. Guaranteed to give perfect satisfaction. Send for sample gross and you will not have any other trap that catches mice alive. The inventor of the Ideal invented all of the leading traps in the market today, and he says this one is perfection. Great care is taken in the manufacture of the Ideal, and every trap is perfect. A single trap for inspection will be sent by mail upon receipt of 5c. in stamps.

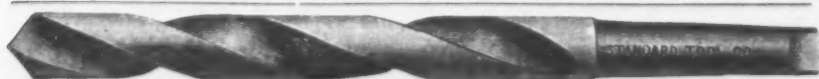


GEO. M. SCOTT,
Bellows Manufacturer,
Johnson Street,
Cor. 22d St.,
CHICAGO, ILL.



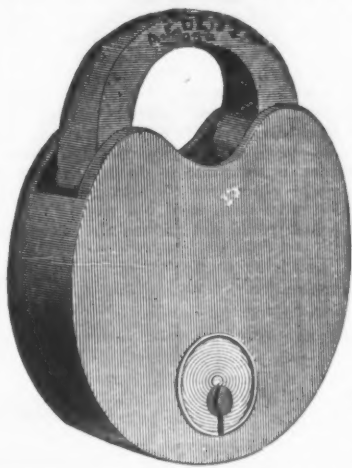
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PITTSBURGH, PA.,
BUILDERS' FINE HARDWARE,
Embracing Door Locks, Latches, Knobs, Butts, Sash Locks, &c.
IMPROVED ROSE ESCUTCHEON KNOBS,
In GENUINE BRONZE & IMITATION BRONZE.
PADLOCKS.
TEA, COUNTER, UNION AND PLATFORM SCALES.

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JOHN H. GRAHAM & CO., Agents, 113 Chambers St., New York.



STANDARD TOOL CO., Cleveland, O. **W. A. BABCOCK,**
Manager.

A. E. DEITZ.



DURRIE & McCARTY, Agents,

97 Chambers & 81 Reade Sts., New York.



CAST BRASS HARDWARE

FOR
ICE HOUSES AND
REFRIGERATORS.

Manufactured and kept in stock by

W. & J. TIEBOUT,
Manufacturers of
BRASS, GALVANIZED & SHIP CHANDLERY
HARDWARE,
Nos. 16 & 18 Chambers St.,
NEW YORK.



ALWAYS GIVES THE
UTMOST SATISFACTION.

Main Belting Co.,
Manufacturers of
THE LEVIATHAN
COTTON
BELTING.

Unsurpassed for
Strength, Durability and
Cheapness.

Made to any Length,
Width and Strength.

Main Driving Belts.

Guaranteed to Run
Straight, Even Through-
out.

No Cross Joints, Un-
affected by Damp,
Clings well to the Pulley,
Has no equal. In fact,
is THE BELT.

MAIN BELTING
COMPANY,
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COMMISSION MERCHANT
FOR FOREIGN FIRMS.

Catalogues and Samples furnished upon application.

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POCKET-BOOK

OF
Mensuration, Geometry, Trigonometry, Rules
Tables and Formulas Relating to the Strength
and Stability of Foundations, Walls, Butt-
resses, Piers, Arches, Posts, Ties,
Beams, Girders, Trusses, Floors,
Roofs, &c., &c. Statistics and
Tables Relating to Carpen-
try, Masonry, Drainage,
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Plumbing, &c., &c.

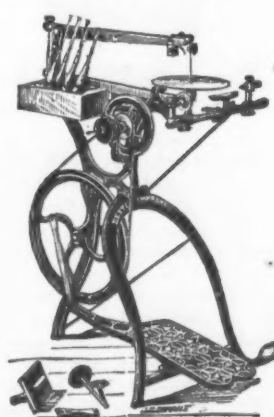
F. E. KIDDER, C. E.

Morocco, Round Corners; 600 Pages; 408 Engravings.
Price, \$3.50.

Sent, postpaid, on receipt of the price, by
DAVID WILLIAMS,
83 Reade St., New York.

ANY HARDWARE DEALER CAN HAVE A CHRISTMAS TRADE ON
SCROLL SAW GOODS
IF HE WILL GET READY FOR IT.

We now handle nearly all the Bracket Saw Blades which are used in this country, and also export large lots of them. The STAR BLADES we control, and are the New York Agents for the Griffin Bracket Blades. We also sell Wood, Designs, Clock Movements, and all things else in the line.



THE LESTER SAW and THE ROGERS SAW
have held their place against all comers, and are now the standard machines the world over. Since last year we have made FOUR great improvements on these saws—first, a new Rubber Blower, which gives as much blast as is desired; second, a new Clamp, tunnel-shaped, which guides the Saw to its place in the dark; third, a Roller inserted in the table at the back of the Saw, which makes it run as true as those which go in guides; fourth, a new Stretcher Rod, which gives the Saw a perfect adjustment.

SEND FOR CATALOGUE.

MILLERS FALLS CO.,
74 Chambers Street, - NEW YORK.

CHAMPLAIN
Forged Horse Nails.
MANUFACTURED BY THE
NATIONAL HORSE NAIL CO.,
Vergennes, Vermont.
HOT FORGED AND COLD HAMMERED POINTED. MADE OF BEST
NORWAY IRON AND WARRANTED.
WAREHOUSE
97 CHAMBERS AND 81 READE STREETS NEW YORK.
DURRIE & McCARTY, Sole Agents.

H. B. SEIDEL,
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E. T. CANBY,
Sec. and Treas.

THE SEIDEL & HASTINGS CO.,
WILMINGTON, DELAWARE,
New York Office, No. 90 John St.; Entrance on Gold St.,
MANUFACTURERS OF

BEST CHARCOAL
BOILER PLATES,
AND PLATE IRON GENERALLY.
ALSO BEST QUALITY HOMOGENEOUS STEEL PLATES.

We ask the special attention of the trade to our C. H. No. 1 Boiler Plates, which we manufacture expressly for the Shells of Steam Boilers and stamp 50,000 pounds T. S. when desired. One hundred and sixteen tests of this iron, made during the last three years by the U. S. Inspectors of Steam Vessels, show an average tensile strength of 55,568 pounds to the sectional square inch, and an average reduction of area of the fractured section of 30% per centum. Our prices are as low as the production of a good article will admit of.



VARIETY IRON WORKS.

ALFRED C. REX & CO.,

MANUFACTURERS OF

HARDWARE SPECIALTIES, IRON TOYS & NOVELTIES.

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DAY BROS.'

PORTABLE FORGES,

Fan Blowers, Tire Sanders, etc.

All sizes. The most improved and handiest.

Blacksmiths' Machines of all sorts.

Send for full particulars.

419 & 421 N. 2d St., PHILADELPHIA, PA.



PURE TURKISH EMERY.
WALPOLE EMERY MILLS
South Walpole, Mass.

English Letter.

(From Our Regular Correspondent.)

LONDON, January 5, 1885.

THE NEW YEAR

has now fairly set in in one sense, but from a trade and commercial standpoint there has really been but little done up to to-day, whence the serious work of the 12 months may be said to date. At many of the iron and steel works a restart has not been made even now, owing to stock-taking operations and in some cases to an absolute want of orders, but I gather that in a general way a recommencement will be made during this week. It is found that there has been a certain accumulation of orders during the holidays, so that it seems probable that matters will continue to move on in much the old style. The quarterly meetings to be held a few days hence will afford opportunities for comparing notes and testing values, although there is no probability that the "list" rates will undergo any alterations. It is out of the question, of course, that there should be any advance, and the prime costs are already cut so fine that a reduction is declared to be impossible. The *status quo* will be maintained, therefore, for what it is worth, seeing that at no time these six or seven months past have quoted rates been in accord with actual selling prices. The outlook is not at all brighter than when I last wrote to you; indeed, the political situation appears to grow so complicated that people are discouraged and are disposed to take a very gloomy view of the near future. Nobody knows why Great Britain should not continue at peace with all the world, but the air is full of rumors as to the intentions of France, the animosity of Germany, the irritation of Austria, the enmity of Russia and all the rest of it, so that commercial men Bull scarcely knows which way to turn in order to convert the nimble nineness into the reliable shilling on a safe and sure basis. Even neutral men in politics confess to a sort of alarm at the peculiar symptoms by which we are surrounded, although they hope that the scare may prove temporary and of no real consequence to us as a nation or to our friends and relatives in Australasia and South Africa.

THE IRON MARKET.

in common with all other markets, has been uncommonly quiet this week. As a matter of fact, scarcely any business has been done, owing to the holidays, either in the open market or at the works; consequently my report must be of the briefest on the present occasion. Some interest has centered in the annual statistics as to pig-iron stocks, &c., in different parts of the country, but the figures presented do not appear to be such as are likely to have any great weight upon the near future of the trade. The decrease of 14,000 tons in Scotland is, however, more satisfactory than had been anticipated, while the good shipments from Middlesboro' are in the same category. At the moment values remain unaffected, and the proximate course of affairs as regards crude iron will not be plainly apparent until toward the end of this week, by which time the Scotch holidays will have come to an end and business resumed. This week warrants have been quiet, closing on Wednesday last (when the market was suspended for the week) at 42/3 $\frac{1}{2}$ ton. Makers' brands of Scotch pig are 6d. or so $\frac{1}{2}$ ton easier. At Middlesboro' and elsewhere in the melting districts values remain as of late, with a fair number of inquiries as to futures, but without any current sales of note. All sorts of manufactured iron are quiet, and work is generally suspended—in some instances without any prospect of being actively resumed unless orders should accumulate during the next week or ten days. I call Welsh common bars 24. 15/ @ 25 $\frac{1}{2}$ ton for ordinary assortments, less 3% discount for cash. Heavy wrought scrap iron is dull, both for home use and export, prices being 24/3 @ 24/4 f.o.b. London for picked lots. Old-iron rails are quiet, with few on offer, as the railway companies prefer to hold for better prices than those now obtaining. Freight rates are unchanged and nominal as regards Transatlantic rates. To Australia and the East recent quotations hold good. Steel is without alteration, almost all the works being stopped. In reference to the proposed new departure at Woolwich, it is believed that the Government will not start the manufacture of steel forgings there, owing in part to the large private capital already embarked in the trade on the strength of implied promises of all the Government work, and in part owing to the impossibility of competing in prices with private manufacturers. Crop ends are called 50/ @ 52/6 $\frac{1}{2}$ ton, f.o.b., and old railway leaf-spring steel is neglected at 51/ @ 52/ $\frac{1}{2}$ ton, net cash, c.i.f. New York. Steel rails are easier at the following association prices: D. H., 24. 15/ $\frac{1}{2}$ ton; flanges, 56 lb and over, 24. 17/6; 50 to 56 lb, 25. 45 to 50 lb, 25. 2/6; 40 to 45 lb, 25. 5/; 35 to 40 lb, 25. 7/6; 30 to 35 lb, 25. 10/; and 25 to 30 lb, 25. 12/6 $\frac{1}{2}$ ton. These quotations are for delivery on railway trucks at the various works, the cost of putting f.o.b. ranging from 1/6 to 3/6 $\frac{1}{2}$ ton, according to the port of shipment. The success of the Denain-Anzin Company, in Roumania has given rise to the report that the association is likely to break up, but I am assured on excellent authority that such is not the case, the combination being as strong now as at any former period of its existence. It is suspected that the French makers are being used as instruments for "smashing the association" by parties who are opposed to it, but all such outside efforts are declared to be entirely futile.

FREE TRADE AND FAIR TRADE.

In reference to the letters of Mr. Giffen, of the Board of Trade, proving that free trade has greatly benefited us, the following is published by the *National Review*:

MR. GIFFEN AND JOHN BULL.

Mr. G.

"What right have you, Johnny, to grumble, And come gnashing at me with your jaws?"

J. B.

"When I feel the inside of me rumble, I've a right to hunt after the cause,"

Mr. G.
"But, remember, all science has settled,
And every great thinker has said—"

J. B.

"When the tail of a dog is tin-kettled
Can he carry long tales in his head?"

Mr. G.

"It is proved by statistic deduction,
And all Economists declare—"

J. B.

"That our industries thrive upon suction,
The suction of nothing but air."

Mr. G.

"Well, the only thing real is reason;
And to talk of your commerce betrayed,
And your furnishing country, is treason
To the principles sound of Free Trade!"

J. B.

"By those principles sound I lie muzzled,
With my own tongue to chew, for my health;
And how can I help being puzzled,
When I was to have wallowed in wealth?"

Mr. G.

"But reflect on the bliss of your neighbor,
And his joy in your money broad-cast;
What you pay to enrich foreign labor
Will come back to you, somehow, at last."

J. B.

"Then the true way to save is to revel,
And the loss is millionaire;
Every guinea he flings to the d—
Will be his again—when he gets there."

Mr. G.

"Away with this selfish deception!
All nations grow rich by our aid.
And, when they abandon Protection,
They will come to our views of Free Trade."

J. B.

"But ere that, I shall starve, Mr. Giffen,
And the Yankee will write on my tomb—
'His Trade is extinct as his Griffin,
And I wove his shroud with his loom!'"

SCOTCH PIG IRON

has been very quiet since I last wrote, the warrant market having been closed from December 31 up to this morning. The closing price of warrants was 42/3, and the average price for the year 1884 42/1 1/2, against 46/9 in 1883 and 49/4 1/2 in 1882. With regard to the statistics given by me elsewhere in this letter, I think it right to inform you that the figures are those of the Pig Iron Trade Association of Merchants and Brokers. The ironmasters held a couple of private meetings to arrive at absolutely accurate statistics, but found that no returns had been made by several furnaces, including Summerlee, Govan and Calder, Clyde and others. The decrease in Connal's stocks last week was 8 tons only, and it appears likely that there will be an increment for some time henceforward. The chief feature of the trade at the moment is the continued heavy importation of Middlesboro' pig iron. Scotch makers' brands are about as last week.

ANNUAL STATISTICS.

From among the heavy crop of annual statistics for 1884 which are being poured forth on all sides, I select the following as being most likely to interest your readers:

SCOTCH PIG IRON

	1884.	1883.
Production.....	928,000	1,129,000
Consumption—in foundries.....	237,000	265,000
In malleable and steel works.....	231,000	248,000
(Quantity of malleable iron and steel made: 1884, 387,000; 1883, 427,000).....	468,000	483,000
Exports—Foreign, 316,008, less English iron transhipped (estimated), 3,400.....	312,608	415,612
Coastwise.....	197,251	304,045
Railway to England.....	17,282	27,343
Total.....	524,000	647,000
Stocks—In Connal's stores.....	579,423	284,136
Quantity in makers' hands.....	241,577	290,892
Total.....	821,000	575,000
Production.....	Decrease, 141,000	
Consumption.....	15,000	
Exports.....	113,000	
Stocks.....	14,000	
Average price M/n warrants.....	42/1 1/2	46/9
Average number of furnaces in blast.....	85	110
Number of furnaces in blast on December 25.....	63	108
Imports of English iron by rail and water.....	360,000	432,000
Lowest price touched, June 4.....	40/10	43/6
Highest price paid, January 21.....	44/7 1/2	49/3 1/2

HEMATITE PIG IRON.

Monthly Average Prices of Hematite Iron, f.o.b. Cumberland Ports, for the last Six Years.	1879.	1880.	1881.	1882.	1883.	1884.
Jan.....	32/0	31/0	31/0	31/0	30/0	30/0
Feb.....	32/0	31/0	31/0	31/0	30/0	30/0
Mar.....	32/0	31/0	31/0	31/0	30/0	30/0
Apr.....	32/0	31/0	31/0	31/0	30/0	30/0
May.....	32/0	31/0	31/0	31/0	30/0	30/0
June.....	32/0	31/0	31/0	31/0	30/0	30/0
July.....	32/0	31/0	31/0	31/0	30/0	30/0
Aug.....	32/0	31/0	31/0	31/0	30/0	30/0
Sept.....	32/0	31/0	31/0	31/0	30/0	30/0
Oct.....	32/0	31/0	31/0	31/0	30/0	30/0
Nov.....	32/0	31/0	31/0	31/0	30/0	30/0
Dec.....	32/0	31/0	31/0	31/0	30/0	30/0
Yearly average 57/4 1/2	57/4 1/2	57/4 1/2	57/4 1/2	57/4 1/2	57/4 1/2	57/4 1/2

Number of furnaces in blast, average.....	51 1/2	57 1/2	63
Number of furnaces in blast on December 24.....	40	56	60
Number of furnaces existing.....	79	81	82

Total make during 1884.....	1,228,000
" " " 1883.....	1,450,000
" " " 1882.....	1,608,500

Stocks in makers' hands end of year.....	187,945	141,778	124,334
Stocks in West Cumberland Storing Company's store at Workington.....	92,139	40,892	41,226
Stocks in West Cumberland Storing Company's store at Maryport.....	9,759		
Stocks in Furness Railway Company's store at Barrow.....	69,737	27,126	12,100
Total.....	259,600	309,800	177,650

Shipments of hematite pig iron, 12 months, ending Dec. 24 (coastwise).....	382,481	408,419	457,965
Shipments of hematite pig iron, 12 months, ending Dec. 24 (foreign).....	187,460	238,158	311,086
Total.....	569,941	646,577	769,051

Shipments of steel rails and blooms (coastwise).....	210,254	183,947	167,102
Shipments of steel rails and blooms (foreign).....	68,504	97,275	86,857
Total.....	278,758	281,222	253,959

(Local consumption and export by rail not included in these returns.)			
* Exclusive of 2000 tons spiegeleisen and Scotch pig iron.			

TIN PLATES.

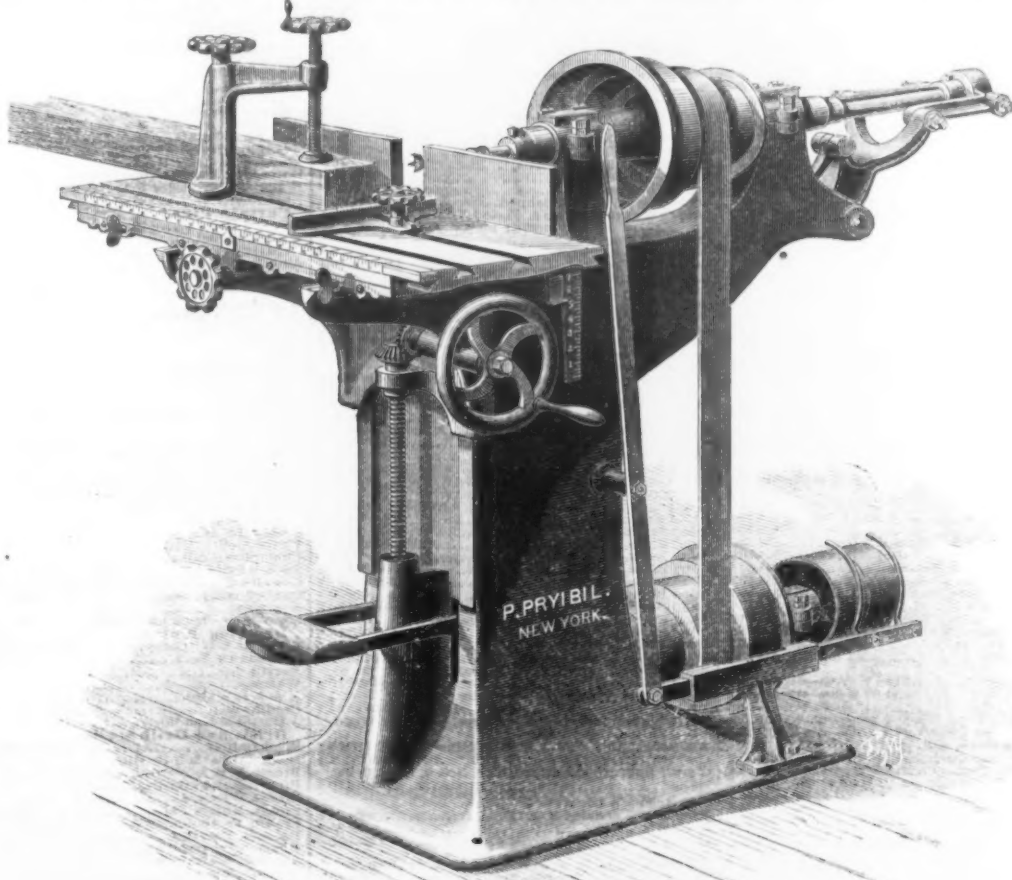
In London there is no change to report in the market, owing to the holidays and the

near approach of the Birmingham quarterly meeting. I quote IC cakes 13/9 @ 14/3, and IC charcoals 16/3 @ 18/1. There is reported a fair inquiry for Bessemer steel cokes, 14 x 19 1/2, with buyers 14/3, f.o.b. Liverpool. At Liverpool the business in tin plates is still rather slow and dragging, though a quicker return to business was made than had been anticipated. There were numerous inquiries made on Monday, and these have been followed up moderately well during the succeeding days—that is, so far as inquiries are concerned—but the actual amount of business transacted has not been at all commensurate with the inquiries made. This, of course, is owing to the low figures that still rule, and nothing like a big business is entered at the low prices now offering all round for the various sorts of tin plates. What little there has been doing in coke tins has been mostly at 14/ for well-

Of refined petroleum alone the exports from New York, Philadelphia and Baltimore to Germany last year were 167,000,000 gallons, or about 37 per cent. of our total exports. The proposed increase of tariff rates would be equivalent to a discriminating tax of \$1,000,000 per annum against the American product. There are many substantial reasons why Germany should desire to check the immigration of her subjects to the United States, but this fact alone would hardly vindicate the wisdom of her Government in favoring a policy of retaliation.

Horizontal Boring Machine.

We show herewith a horizontal boring machine recently brought out by P. Prybil, manufacturer of wood-working machinery,



NEW HORIZONTAL BORING MACHINE.

known brands, with 14/3 @ 14/6, IC, for the better class of plates. For the common grades 14/ is not obtainable, some outside brands having exchanged hands again at a trifle less, and it is this sort of thing that keeps the market in such a depressed state as to prices. The brands which are in really good repute cannot be bought even at 14/1. IC. Coke tin wasters are in fair demand, and while 13/3 is the price for the general run of plates, there are odd parcels of 14 x 10 and 14 x 20 sold occasionally at 1 1/2 d. @ 3d. or so less. The demand for No. 2 quality or Bessemer-steel plates in coke grades is pretty good on the whole, though prices are down almost to the level of what is usually paid for good ordinary coke tins; 14/3 IC is what is now generally paid for these in most brands. There have been several orders given out at this price this week, and some ordinary sizes at a trifle less even than the above price. There is not so much demand for Siemens or best steel plates in coke grades, and but a few orders have been placed this week at prices varying from 15/ to 15/3 IC. The inquiries for charcoal and best charcoal tin-plates have not been many this week, and really there is little doing in either sort and no variation in the prices quoted last week. For turners there is only a moderate business doing, and it is with difficulty that late figures have been maintained, the tendency of prices for these being again in a downward direction. Well-known brands of good repute cannot be bought at anything less than 14/ IC, but there are some parcels offering for which a little less is occasionally taken. It is expected in some quarters that a heavy business will be brought off on Birmingham quarterly meeting day.

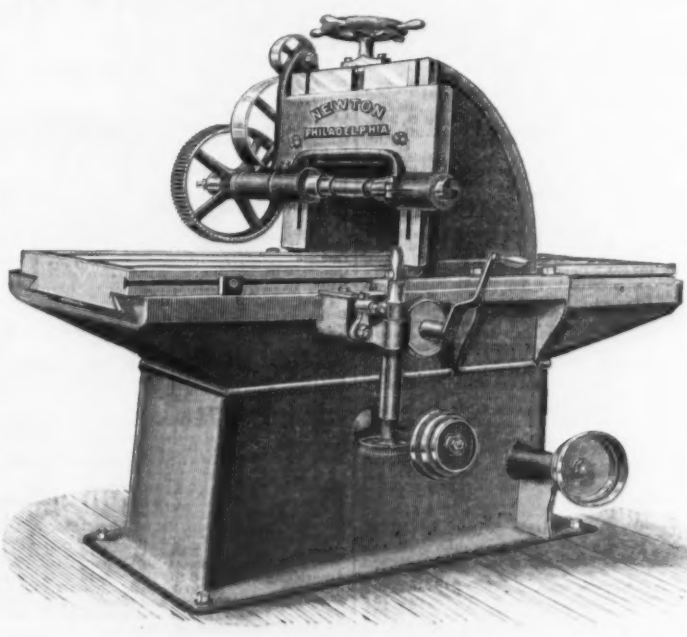
The German Tariff.

The animus of German legislation prejudicial to the American export trade is not clearly apparent. Its primary object may be to protect home producers, or it may have an occult purpose in the creation of a sentiment hostile to emigration. In either case the effect is to embarrass international trade. American cereals and the petroleum interest are the most likely to suffer should Germany persist in the policy of exclusion, although the list of articles on which a higher customs tariff is proposed takes a tolerably wide range. Among the proposed changes in the German customs tariff the following duties will be imposed: Cotton twist, 48 to 120 marks. Wheat, 3 marks. Maize, 50 pfennigs. Jute twist and manila hemp, uncolored and unpressed, 5 to 10 marks. Jute twist and manila hemp, colored and pressed, 12 to 20 marks. Dressed yarn and sewing thread, 70 marks. Cords and ropes, 10 marks. Salt fish, in barrels, 3 marks. Fish, otherwise prepared, 12 marks. Fish, in hermetically-sealed cans, 60 marks. Oil, in casks, 4 marks. Palm oil and coconut oil, 2 marks. Hog's lard and fatty substances of the nature of lard, 10 marks. Stearic acid, 10 marks. Fish fat and train oil, 3 marks. Other animal fat, 2 marks. Precious stones and imitations of precious stones, 60 marks. Other stones, 6 marks; or, if in connection with other materials, 24 marks. Mats and floor cloths made of bast, straw or grass, 3 marks. Candles, 18 marks. Ore and precious metals, unless expressly subjected to duty, asbestos and skins and hides for tanning are exempt from duty.

The gun, which is unquestionably a most interesting piece of apparatus, has a single barrel and is arranged in such a way that the force of the recoil from one round at the moment of firing is utilized and constitutes the motive power for loading and firing the next round, and so on, round after round in succession. To effect this the barrel is so mounted in its case that, at the moment of firing, the recoil drives it backward about 1/4 inch, and it is this movement of the barrel alone that actuates the mechanism and enables the maintenance of a continuous fire. The barrel has a caliber of .450 inch, and the gun, with its tripod stand, weighs 126 pounds. It is about 3 feet high and 4 feet 9 inches long from muzzle to rear of firing mechanism. As it is self-firing, the operator can train it as required while it is being discharged. Should the attendant be killed, the gun will still continue firing so long as any

Slabbing and Key-Seat Milling Machine.

The annexed cut illustrates a milling machine for slabbing and key-seat cutting, built by the Newton Machine Tool Works, of Philadelphia, Pa. The tool is turned out in three sizes, No. 1 having a carriage 4 feet long and 9 inches wide, and milling the entire length of the carriage; No. 2 has a carriage 6 feet long and 13 inches wide, and will also mill its entire length; No. 3 has a carriage 8 feet long and 18 inches wide. No. 1 is generally used for cutting key-ways in shafts up to 7 inches in diameter. Nos. 2 and 3 are used not only for key-ways in



NEWTON'S SLABBING AND KEY-SEAT MILLING MACHINE.

inches. The latter is effected through the end-wheel in front, and its extent can be limited by two adjustable stops provided for the purpose. The table is provided with an adjustable square and miter gauge, an adjustable clamp and iron fence, with tapered dovetail ends for facilitating the application of special wooden fences, and with scales for setting to sizes. The height of the table is adjustable, to enable the operator to set it low when boring shallow holes, so that he will not have to raise his foot unnecessarily high. The pulley is self-oiling, and the machine can be driven from above, below or from either side. The belt shifter may be used on either side of the machine. The weight is about 735 pounds.

Mr. Hiram S. Maxim's new automatic machine gun which, by simply pulling a trigger once, will feed itself and fire away at the rate of 600 rounds per minute, if desired, has of late received a good deal of atten-

engine and locomotive shafts, but also for slabbing and milling connecting rods and general slabbing. The arbor is so made that the cutters can be adjusted from right to left without removing them from the machine. The carriages can be made to any desired length. The vertical adjustment of cutters is rapidly effected. Each machine has three changes of speed, and is strongly back-gear, giving great power. There are three changes of feed with automatic stop motion and quick return.

M. Niandot has recently been experimenting with some success on the reduction of chloride of sodium (common salt) into its components by means of the electric current. It is to be hoped that he has discovered an economical means of separating this body into its elements, as both chlorine and metallic sodium are of very great value in the arts.

10

[illegible]

Parallel, Frenitis.....	dis 25 45
Parrot Wire, Bright and Annealed, Nos. 10 to 14.....	dis 20 10
Saw Filers, Bonney's Nos. 2 & 3.....	¶ doz \$15.00, dis 40
Saw Filers, Stearns's.....	dis 20 10
Saw Filers, Hopkins.....	¶ doz \$17.50, dis 35
Saw Filers, Tinsley's.....	dis 10 10
Saw Filers, Wentworth.....	dis 20 10
Sowell Hand Vices.....	dis 20
Richardson's Vices.....	dis 25
Washers Cutters.	
W. Smith's Patent.....	¶ doz \$12.00, dis 20 10 10 10
Johnson's.....	¶ doz \$11.00, dis 33 1/2
Appleby's.....	¶ doz Pol. \$14, Jan 1, \$16, dis 35
Bonney's.....	dis 30 10
Washers. —See Nuts and Washers.	
Well Wires —8 in., \$1.85; 10 in., \$2.15; 12 in., \$2.50.	
Wire.	
Brass and Copper, new list, Jan. 18, 1884.....	dis 30
Best Bright and Annealed, Nos. 0 to 10.....	dis 7 1/2
Market, Copied.....	dis 65 1/2
Market, Galvanized.....	dis 68 1/2
Market, Tinned.....	dis 70 1/2
Stone, Bright and Annealed Nos. 10 to 36.....	dis 7 1/2
Stone, Bright and Annealed Nos. 27 to 36.....	dis 7 1/2
Stone, Galvanized, Nos. 19 to 30.....	dis 7 1/2
Stone, Galvanized, Tinned list.....	dis 7 1/2
Tinned Broom Wire.....	dis 65 1/2
Cast Steel Wire.....	dis 55 1/2
Cast Steel Wire, Tinned list.....	dis 7 1/2
Annealed Grape, Nos. 10 to 14.....	dis 7 1/2
Fence Staples.....	¶ 50
Fence Staples, Galvanized.....	dis 7 1/2
Stub's Steel Wire.....	\$0.00 to 12, dis 30
Barn Fence.....	See Trade Report
Best Wire, Good.....	dis 55
Steel Music Wire, Nos. 7 to 30.....	55¢ ¶ 50
Picture Wire.....	dis 55
Wire for Wire.....	¶ coil 25, dis 55
Wire Cloth, green, drab and black, ¶ 100 sq. ft.....	dis 10
Wire Cloth, with Folding Bench, No. B, 11 inch, 12 inch.....	\$2.00 net (at 55¢)
Wrenches —American Adjustable.....	dis 15
Baxtor's Adjustable "S".....	dis 33 1/2
Baxtor's Wrench, "S".....	dis 33 1/2
Cox's Genuine.....	cash in 10 days, dis 10 1/2
Cox's Mechanics.....	dis 60 1/2
Cox's Patent, Adjustable.....	dis 60 1/2
Cox's Pattern, Wrought.....	dis 75 1/2 (at 75 1/2)
Gilard Standard.....	dis 65 1/2
Gilard's Patent, Adjustable.....	dis 65 1/2
Bemis & Call's Patent Combination.....	dis 30
Bemis & Call's Metric's Pattern.....	dis 35
Bemis & Call's Metric's Pattern.....	dis 35
Bemis & Call's Bright's Pattern.....	dis 35
Bemis & Call's Bright's Pattern or Gal. Pipe.....	dis 35
Alken's Pocket Bright.....	\$0.00, dis 50 1/2
Alken's Pocket Bright.....	¶ doz \$4.00, dis 50 1/2
Robert's Patent Combination.....	dis 60 1/2
Boardman's.....	dis 25 1/2 25 1/2
"Always Ready".....	dis 25 1/2
Allington's.....	dis 60 1/2
Donahue's Engineer.....	dis 25
Wringers.	Per doz.
Novelty, for Common Tubs, Nos. 2, 10, 11-inch.....	\$30.00
Novelty, for Common Tubs, Nos. 3, 11-inch.....	34.50
Novelty, for Common Tubs, No. 2, 10 to 12 inch.....	36.00
Excelsior, for Stationary Tubs, No. F, 11-inch 43.50	
Excelsior, with Folding Bench, No. A, 10-inch 48.00	
Excelsior, with Folding Bench, No. B, 11-inch 48.00	
Universal, No. 2 1/2.....	30.00
Universal, No. 3.....	33.00
Universal, No. 4.....	36.00
Universal, No. 1.....	37.00
Universal, No. 2.....	38.00
Universal, for Set Tubs, E 1 1/2.....	41.00
Universal, for Set Tubs, C 1 1/2.....	46.00
Adams's.....	35.00
Peerless No. 3 1/2.....	30.00
Peerless No. 3 1/2.....	34.50
Metropolitan No. 2.....	35.00
Metropolitan "No. 2 1/2".....	30.00
Wrought Staples, Hooks, &c. —See Hooks.	

90 BEKMAN ST. NEW YORK

MANUFACTURERS OF
 'CLIMAX' BARN DOOR HANGERS,
 "ZENITH" BARN DOOR HANGERS,
 For Wood Track,
 MOORE'S FREIGHT CAR DOOR HANGERS,
 BAGGAGE CAR DOOR HANGERS,
 RAILROAD HANGERS,
 PARLOR DOOR HANGERS.

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Nickel Anodes,
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Polishing Lathes,
Polishing Felt,
Polishing Rouges,
Pol'ng Compositions,
Walrus Leather,
Wood Emery Wheels,
Platers' Brushes,
&c., &c., &c.



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 ESTABLISHED IN 1866 BY JOHN D. SHEPARD.
 MANUFACTURERS OF
HARDWARE SPECIALTIES.



MAMMOTH FOUNDRY
 MAIN BUILDING
 COVERS OVER 3 1/2 ACRES.
BUFFALO, N.Y.



Zucker & Levett Chemical Co., WORKS: 538 to 564 W. 16th St. OFFICES: 36 to 40 11th Ave. NEW YORK, U. S. A.

WHOLESALE METAL PRICES, January 21, 1885.

METALS.

IRON.—Duty: Bars, 8-10¢ to 11-10¢ per lb.; provided that no bar iron shall pay a less rate of duty than 35¢. Sheet, 11-0¢ to 15-10¢ per lb. Band, Hoop and Scroll, 1¢ to 1-4-10¢ per lb. Railroad Bars weighing more than 25 lb per yard, 7-10¢ of 1¢ per lb.

Standard American Pig Iron.

Foundry No. 1 X..... per ton \$18.00 @ 19.00
Foundry No. 2 X..... per ton 17.00 @ 18.00
Gray Forge..... per ton 16.00 @ 17.00

No. 1 Scotch Pig Iron.

Carnbroe..... per ton 19.50 @ 20.50
Coltness..... per ton 21.50 @ 22.50
Shotts..... per ton 21.50 @ 22.50
Glenarnock..... per ton 19.50 @ 20.50
Gartshore..... per ton 21.00 @ 22.00
Summerlee..... per ton 21.50 @ 22.50
Dalmellington..... per ton 19.50 @ 20.50
Eglington..... per ton 19.00 @ 20.00
Clyde..... per ton 19.50 @ 20.50

Rails.

Steel, at Eastern mills..... per ton 28.00 @ 29.00
Old Rails, T.S..... per ton 16.00 @ 17.00

Scrap.

Wrought, per ton, from yard..... 17.50 @ 18.00

Bar Iron from Store.

Common Iron:
¾ to 1 in. round and square..... per lb 1.7 @ 1.9¢
1 to 6 in. ¾ to 1 in. per lb 1.7 @ 1.9¢

Refined Iron:
¾ to 2 in. round and square..... per lb 1.9 @ 2.2¢
1 to 6 in. ¾ to 1 in. per lb 1.9 @ 2.2¢

Rods—¾ and 1-16 round and sq..... per lb 2.2 @ 2.5¢
Rods—1 to 6 in. round and sq..... per lb 2.3 @ 2.6¢
Burdens—1 to 6 in. round and sq..... per lb 2.3 @ 2.6¢
Burdens—1 to 6 in. round and sq..... per lb 2.3 @ 2.6¢
Norway Nail Rods..... per lb 2.6 @ 2.9¢

Sheet Iron from Store.

Common American. R. G. Cleaned.
Nos. 10 to 16..... per lb 2.70 @ 3.0¢
17 to 24..... per lb 2.80 @ 3.1¢
25 to 34..... per lb 2.90 @ 3.2¢
35 and 36..... per lb 3.00 @ 3.3¢
27..... per lb 3.50 @ 3.8¢
28..... per lb 3.50 @ 3.8¢

Galvanized, 10 to 30..... per lb 3.50 @ 3.8¢
Galvanized, 21 to 24..... per lb 3.50 @ 3.8¢
Galvanized, 25 to 30..... per lb 3.50 @ 3.8¢
Galvanized, 27..... per lb 3.50 @ 3.8¢
Galvanized, 28..... per lb 3.50 @ 3.8¢
American Russia..... per lb 3.50 @ 3.8¢
American Cold Rolled B. B..... per lb 3.50 @ 3.8¢

Iron Wire. See Wire.

STEEL.—Duty: Ingots, Bars, Sheets, &c., valued at 4¢ per lb or less, 45¢ ad. val.; valued above 4¢ and not above 7¢ per lb, 2¢ ad. val.; valued above 7¢ and not above 10¢ per lb, 3¢ ad. val.; valued above 10¢ per lb, 4¢ ad. val. Extra—Steel Bars, Rods, &c., cold hammered or polished, in any way in addition to ordinary hot rolling, 1½¢ per lb in addition to above; Steel Circular Saw Plates, 1¢ per lb in addition to the above.

American Cast Steel.

For American Steel, see Pittsburgh quotations.

English Steel.

Best Cast..... per lb 15¢ @ 16¢
Extra Cast..... per lb 16¢ @ 17¢
Circular Saw Plates..... per lb 14¢ @ 15¢
Round Machinery, Cast..... per lb 10¢ @ 11¢
Swaged, Cast..... per lb 10¢ @ 11¢
Best Double Shear..... per lb 10¢ @ 11¢
Blister, 1st quality..... per lb 10¢ @ 11¢
German Steel, Best..... per lb 10¢ @ 11¢
3d quality..... per lb 9¢ @ 10¢
3d quality..... per lb 9¢ @ 10¢
Sheet Cast Steel, 1st quality..... per lb 12¢ @ 13¢
3d quality..... per lb 12¢ @ 13¢
3d quality..... per lb 12¢ @ 13¢

TIN.—Duty: Plates, Sheets, Taggers and Termes, 1¢ per lb; Bars, Block and Pig Iron.

Banco..... per lb 30¢ @ 31¢
Straits..... per lb 30¢ @ 31¢
English..... per lb 30¢ @ 31¢
Bar..... per lb 30¢ @ 31¢

Charcoal Tin Plates.

1 C 10x14 225 sheets..... per box \$5.35 @ \$6.00
1 C 12x12 225 "..... " 11.00 @ 12.50
1 C 10x14 225 "..... " 6.50 @ 7.25
1 C 12x12 225 "..... " 6.50 @ 7.25
1 C 10x14 225 "..... " 5.00 @ 5.50
1 C 12x12 225 "..... " 5.00 @ 5.50
1 C 10x14 225 "..... " 6.25 @ 7.00
each additional X add..... " 1.50

Coke Tin Plates.

Best. Ordinary.
1 C 10x14..... \$5.00 @ 4.87½¢
1 C 12x12..... 5.12½¢ @ 4.75 @ 5.00
1 C 10x14 gutters, 225 sheets, 8.00 @ 7.25
1 C 12x12, 112 sheets..... 10.50

Terne Plates.

Prime Char. 3d. quality. Coke.
1 C 14x20 M. F. 37 @ 7.35 @ 8.75
1 C 14x20 Trengoning, Old Process..... 14.00
1 C 14x20..... 4.75 @ 4.87½¢ @ 4.50
1 C 14x20..... 6.00 @ 6.12½¢
1 C 14x20..... 9.75 @ 10.00
1 C 14x20..... 12.50 @ 13.00
1 C 14x20..... 13.50 @ 14.00

Tin Boiler Plates.

1 C 14x20, 2 sheets for No. 7, 112 sheets..... \$13.50
1 C 14x20, 2 " " No. 8..... 14.50
1 C 14x20, 2 " " No. 9..... 16.00

COPPER.—Duty: Pig, Bar and Ingot, 4¢; Old Copper, 3¢ per lb. Manufactured (including all articles of which copper is a component of chief value), 35¢ ad. valorem.

Ingot, Lake..... per lb 11½¢ @ 11¾¢
Ingot, Baltimore..... per lb 11¢ @ 11½¢
Ingot Anchor..... per lb 11¢ @ 11½¢
Brassiers' Copper, 10 oz. and 12 oz. sq. ft. and over..... per lb 18¢
Brassiers' Copper, ordinary sizes, under 10 oz. and over 12 oz. sq. ft..... per lb 18¢
Brassiers' Copper, 10 oz. and 12 oz. sq. ft. and over..... per lb 22¢
Lighter than 10 oz. sq. ft..... per lb 25¢
Circles less than 8 in. in diam..... per lb 23¢
Segment and Pattern Sheets..... per lb 24¢
Locomotive Fire-Box Sheets..... per lb 20¢
Sheathing Copper, over 12 oz. sq. ft..... per lb 16¢
Bolt Copper..... per lb 18¢
Copper Bottoms..... per lb 19¢
Nickel-Plated Sheathing..... per lb 35¢
Plating extra..... per lb 37¢
Flat Copper Boiler Bottoms or Flat Bottoms, cut to special sizes..... per lb 21¢

Tinning.

14x48, by the case..... per sheet, 8¢
42x18, less than case..... per sheet, 8¢
For tinning both sides, double the above amount.

O'Neill's Patent Planished Copper, Net, 14x48..... per sheet, 8¢
14 and 16 oz. and heavier, 30¢ By the case, 10¢ 25¢
12 oz. and lighter..... per sheet, 8¢

7 in., 14x52, 8 in., 14x56, 9 in., 14x60.
14 and 16 oz. and heavier, 30¢ By the case, 10¢ 21¢
(And all sizes not over 20 in. wide.)
24x48 and 30x60..... per sheet, 8¢
14 and 16 oz. and heavier..... per sheet, 8¢
12 oz..... per sheet, 8¢

Copper Wire. (See Wire.)

Yellow Sheathing Metal, per lb..... 20¢ @ 21¢

BRASS AND GERMAN SILVER.

Brown & Sharpe's Gauge the Standard for Metal; Old English Gauge the Standard for Wire.

Brass Manufacturers' Price List, January 17 1884..... per lb 30¢ @ 31¢

LEAD.—Duty: Pig, 3¢ per 100 lb; Old Lead, 3¢ per 100 lb; Pipe and Sheet, 3¢ per 100 lb.

American..... per lb 4¢ @ 4.12½¢
Bar..... per lb 4¢ @ 4.12½¢
Pipe..... per lb 4¢ @ 4.12½¢
Block Tin Pipe..... per lb 15¢ @ 20¢
Sheet..... per lb 6½¢ @ 20¢
Shot..... per lb Drop, 6¢; Buck, 7¢
Chilled Shot..... per lb 7¢

ANTIMONY...... per lb 10½¢ @ 10¾¢
Cookson..... per lb 10½¢ @ 11¢

SPELTER.—Duty: Pig, Bars and Plates, \$1.50 per 100 lbs.

American, cash..... per lb 4½¢ @ 5½¢
Bergenport..... per lb 4½¢ @ 5½¢

ZINC.—Duty: Pig or Block, \$1.50 per 100 lbs.

Sheet, 2½¢ per lb..... per lb 5¢ @ 5½¢
600 lb casks..... per lb 5¢ @ 5½¢
Zinc—Open..... per lb 5¢ @ 5½¢
Zinc Tubing—Dis. 25¢..... per lb 10¢ @ 10½¢

Plain..... per lb 37¢
Fancy..... per lb 38¢
Scotch and Extra Patterns..... per lb 39¢

RABBIT METAL...... per lb 7¢ @ 7.50¢
N. F. U..... per lb 7¢ @ 7.50¢
A. 2½¢; B. 2½¢; C. 1½¢.

WIRE...... per lb 7¢ @ 7.50¢

Iron Wire.—Put up in 63 lb bundles.

Nos. 00 to 9, 10, 11, 12, 13, 14, 15, 16, 17, 18.

10 11 11½ 12½ 14 15 16

Bright Market Wire..... per lb 70¢ @ 75¢
Charcoal..... per lb 70¢ @ 75¢
Bale Wire, Nos. 7 to 12..... per lb 70¢ @ 75¢
Annealed Market Wire..... per lb 70¢ @ 75¢
Fence Wire, Nos. 8 and 9..... per lb 70¢ @ 75¢
Grape Wire, Nos. 10 to 14..... per lb 70¢ @ 75¢
Bessemer Steel Wire..... per lb 70¢ @ 75¢
Coppered Market Wire..... per lb 70¢ @ 75¢
Bale Wire, Nos. 7 to 12..... per lb 70¢ @ 75¢
Galvanized Market Wire..... per lb 70¢ @ 75¢
Fence Wire..... per lb 70¢ @ 75¢

Stone or Weaving Wire.

Nos. 16 17 18 19 20 21 22 23 24 25 26

Cents..... 14 15 16 17 18 19 20 21 22 23 24 25 26

Nos. 27 28 29 30 31 32 33 34 35 36 37 38 39 40

Cents..... 28 29 30 31 32 33 34 35 36 37 38 39 40

Nos. 16 to 18..... per lb 70¢ @ 75¢
19 to 26..... per lb 70¢ @ 75¢
27 to 36..... per lb 70¢ @ 75¢
Galvanized Stone Wire..... per lb 70¢ @ 75¢

Steel Wire...... per lb 55¢ @ 55½¢
Cast Steel, Steel Wire list..... per lb 55¢ @ 55½¢

Brass and Copper Wire.

Old English Gauge the Standard.—Dis 20 @ 30.

Common High Low Gilding Bronze and Copper.

All Nos. to No. 16..... \$0.22 @ \$0.26 @ \$0.30

Inclusive..... 23 27 31

No. 17 and 18..... 23 27 31

19 and 20..... 23 27 31

21..... 23 27 31

22..... 23 27 31

23..... 23 27 31

24..... 23 27 31

25..... 23 27 31

26..... 23 27 31

27..... 23 27 31

28..... 23 27 31

29..... 23 27 31

30..... 23 27 31

31..... 23 27 31

32..... 23 27 31

33..... 23 27 31

34..... 23 27 31

35..... 23 27 31

36..... 23 27 31

37..... 23 27 31

38..... 23 27 31

39..... 23 27 31

40..... 23 27 31

Spring Wire, 2 cents per pound advance. White-
ened Wire, 3 cents per pound advance. Flat, Square
and Half-Round Wire, 4 cents advance on Round
Wire. Fancy Wire, not less than 10 cents advance on
Round Wire. Spooling on one-pound Spools, 12
cents per pound extra. Spooling on ten-pound
Spools or more, 2 cents per pound extra.

MISCELLANEOUS TINNERS' STOCK.

½ & ¾, Warranted..... 11½¢ @ 12¢

Extra..... 11¢ @ 11½¢

No. 1 Refined..... 11¢ @ 11½¢

No. 2..... 11¢ @ 11½¢

Extra wiping..... 10¢ @ 10½¢

Rivets.

Iron and Tinned, new list, Dec. 10, 1881..... dis. 40¢

In bulk, new list, Dec. 10, 1881..... dis. 40¢

Copper Rivets and Burrs..... dis. 50¢ @ 60¢

Nos. 7 8 9 10 11 12 13 14 15

per lb. 49¢ 50¢ 51¢ 52¢ 53¢ 54¢ 55¢ 56¢ 57¢

Stove Bolts.

American Screw Co. V..... dis. 65¢

R. B. & W..... dis. 65¢

R. & E. Mfg. Co..... dis. 65¢

FRENCH GLASS.

Prices current per box of 50 square feet.
List, September 5, 1884.

Single Thick.

Sizes. 1st. 2d. 3d. 4th.

6 x 8 to 10 x 15..... \$9.50 \$8.50 \$7.50 \$7.00

11 x 14 to 16 x 24..... 10.50 9.50 8.75 8.00

18 x 22 to 24 x 30..... 12.50 11.00 10.25 9.50

15 x 26 to 28 x 36..... 14.00 12.75 11.00

20 x 28 to 34 x 36..... 15.00 13.50 11.75

26 x 36 to 36 x 44..... 16.00 14.50 12.25

30 x 40 to 30 x 54..... 17.50 16.25 13.75

30 x 36 to 34 x 36..... 18.00 16.00 13.00

34 x 58 to 34 x 60..... 22.00 20.00 18.00

36 x 60 to 40 x 60..... 24.00 22.00 20.00

Double Thick.

Sizes. 1st. 2d. 3d. 4th.

6 x 8 to 10 x 15..... \$12.00 \$10.75 \$10.00 \$9.00

11 x 14 to 16 x 24..... 14.00 12.75 11.75 10.7

18 x 22 to 24 x 30..... 15.00 13.50 11.50

15 x 26 to 28 x 36..... 16.00 14.50 12.00

20 x 28 to 34 x 36..... 18.00 16.00 13.00

26 x 36 to 36 x 44..... 21.25 19.75 17.00

30 x 40 to 30 x 54..... 23.50 21.25 18.75

30 x 36 to 34 x 36..... 24.50 22.25 20.00

34 x 58 to 34 x 60..... 28.00 25.00 22.00

36 x 60 to 40 x 60..... 32.00 30.00 28.00

Sizes above—\$15 per box extra for every 5 inches.

All sizes above 62 inches in length, and not mak-
ing more than 81 united inches, will be charged in
the 84 united inches bracket. An additional 10
per cent. will be charged for all Glass more than 40
inches wide. Discount 60¢ to 70 per cent.

PAPER STOCK, &c.

(Dealers' Selling Prices.)

White Shirt Cuttings, No. 1..... Cents 7¢ @ 7½¢

No. 2..... 6¢ @ 6½¢

Mill Assorted Whites..... 5¢ @ 5½¢

Unbleached Muslins..... 4¢ @ 4½¢

City Whites, No. 1..... 4¢ @ 4½¢

New Canton Flannels..... 5¢ @ 5½¢

New Seconds, light..... 3¢ @ 3½¢

No. 2 Whites..... 2¢ @ 2½¢

Cotton Canvas..... 4¢ @ 4½¢

Linon Canvas No. 1..... 1¢ @ 1½¢

Seconds, City No. 1..... 1¢ @ 1½¢

Seconds, City No. 2..... 1¢ @ 1½¢

Colors, 8¢ per lb..... 8¢ @ 8½¢

Manilla Rope..... 2¢ @ 2½¢

Tarred..... 2¢ @ 2½¢

Gunny Bagging, No. 1..... 1¢ @ 1½¢

No. 2..... 1¢ @ 1½¢

Kentucky Bagging..... 1¢ @ 1½¢

Burlap Bagging, No. 1..... 1¢ @ 1½¢

Tar Shavings..... 1¢ @ 1½¢

Soft White Shavings, No. 1..... 1¢ @ 1½¢

White Shavings, No. 2, soft..... 1¢ @ 1½¢

Mixed Shavings, part White..... 1¢ @ 1½¢

Ledger and Writing..... 1¢ @ 1½¢

Solid Stock, No. 1, light..... 1¢ @ 1½¢

Book Stock, No. 1, light..... 1¢ @ 1½¢

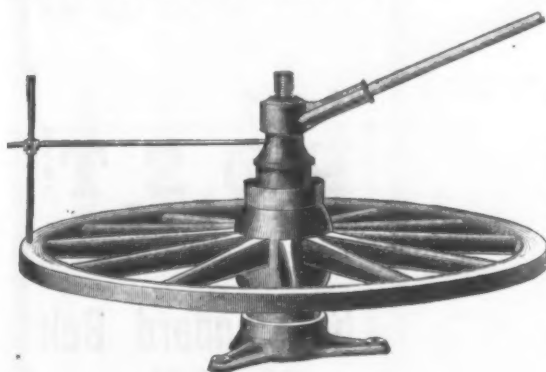
Old Newspapers..... 1¢ @ 1½¢

Pure Manillas and Hardwares..... 1¢ @ 1½¢

HARDWARE NOVELTIES.

A Skein-Box Press.

A Skein-Box Press for pressing skein-boxes into the hubs of wheels, which method is superseding the old plan of driving and wedging them, is manufactured by the Illinois Iron and Bolt Company, of Carpentersville, Ill. A general idea of the press may be gathered from the accompanying cut. The base of the press is of cast iron, and made so that it may be bolted to the floor. A wrought-iron screw extends up from the base, over which the hub and skein-box are placed. The hub and skein-box being thus placed in position, a cap is laid on the box and a nut run down on the

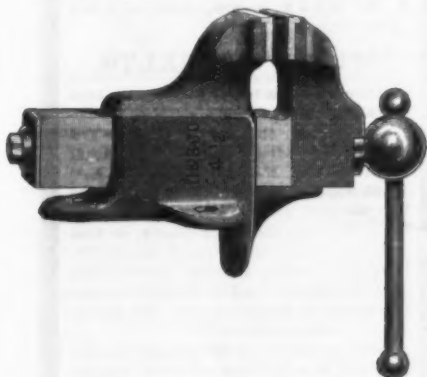


A Skein-Box Press.

screw-threaded bar, and pressing on the skein-box forces it into position. A gauge, as shown in the cut, is arranged to indicate when the box is in. With this machine boxes can be placed into hubs in better shape and in much less time than could be done by the old method of driving, and it is claimed that enough skein-boxes are saved from breakage by the use of this press to pay for it in a short time.

The "I. I. & B. Co." Vise.

The Illinois Iron and Bolt Company, of Carpentersville, Ill., manufacture a new Vise, known as the "I. I. & B. Co." Vise, for which they claim superior merits. Referring to the accompanying cut, which illustrates the vise, it will be noticed that there is a very long bearing in the stationary jaw, thus giving great steadiness in the motion of

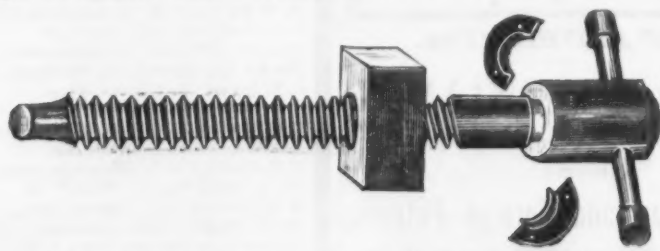


The "I. I. & B. Co." Vise.

the sliding beam. The jaws are faced with L-shaped pieces of steel welded to them, as shown in the cut. The screw, which extends through the entire length of beam, is made with a shoulder at one end and works against the beam, while the other end is held in place by a nut and washer, thus preventing lost motion. The vises are said to be made of the best material and to be very strong and durable.

Patent Metallic Vise Flange.

The accompanying illustration represents the Patent Groove Bench Screw, with Patent Metallic Vise Flange, which is made by the Ohio Tool Company, Columbus, Ohio, and of which they are the patentees and sole manufacturers. The operation of this improvement will be readily apprehended without a detailed explanation, and for it the following advantages are claimed: That it obviates



Ohio Tool Co.'s Bench Screw, with Patent Metallic Vise Flange.

the necessity of mortising the jaw of the vise, and thereby weakening it; that it secures accuracy in working; that it does away with the friction and wear of the end of the head of the screw against the jaw of the vise; that less strength is required in tightening; that the jaw is carried squarely and firmly and works more freely than in the ordinary vise, and that the flange adds strength and durability to the vise at the essential point. For the purpose of introducing these goods they are sold for the present at the same price as the ordinary bench screws.

The Calcutta correspondent of the *Iron-monger* writes that the trial of the American fiber-extracting machines came off in the presence of a number of gentlemen connected with the fiber industry, merchants, &c., on October 29. The machinery was worked by Madras natives. With rhea, 80 pounds of stalk were brought away, the fiber being quite clean and free from gum, in 32 minutes. Three men worked the machine, two supplying and regulating the feed-bed and one removing the fiber to the drying railings. Forty pounds of *Santivera Zeylanica* were treated in 24 minutes, but not so successfully, though the 30 pounds of agave which were passed through the ma-

chine in 14 minutes left nothing to be desired. Taking into consideration all the advantages and drawbacks attending these trials, it is, I think, the general opinion that both for this machine and for that of Death & Ellwood there is a very prosperous future, as this new fiber industry must now shortly become one of the important investments of capital here.

The Low Price of Pig Iron.

Mr. Wm. E. S. Baker, of Philadelphia, has addressed the following communication to the Secretary of the American Iron and Steel Association:

In the *Bulletin* of January 7, at the close of the article on production and prices of pig iron in 1884, you say: "In mill irons the present price of \$16 at Philadelphia is still about \$1 above the lowest price in 1878." Now, while this is literally correct on the single question of prices, it is misleading if taken in connection with the present cost of pig iron; because, according to your own statistics, anthracite coal in Philadelphia cost \$3.22 per ton on an average for the year 1878, while in 1884 the average was probably \$4.50, and as it takes, say, a ton and a half of coal to make a ton of pig iron, the additional cost of pig iron in 1884 over 1878 is

\$1.92 per ton for coal alone. As your figures are all given for Philadelphia, I use them at that point, but, as the furnaces using anthracite coal are chiefly in the interior, the difference can fairly be put down at \$1 50 per ton of iron, while ore, labor and contingencies are no lower than in 1878. These facts justify me in saying that pig iron, bar iron, nails, and similar articles having pig iron for their base, are lower to-day, in proportion to their actual cost, than they have been in 40 years, or since records were kept of the exact figures. A moderate consumption continues, and stocks of goods are low, the demand being at the minimum, and will continue so while prices decline. But the bottom once reached (and we hope that has occurred, because the most favored producers cannot meet current prices), an increased demand and better prices must be near. My fear is that a slight reaction will bring an avalanche of orders, now withheld, and thus repeat the unfortunate experience of 1879.

INDUSTRIAL ITEMS.

MASSACHUSETTS.

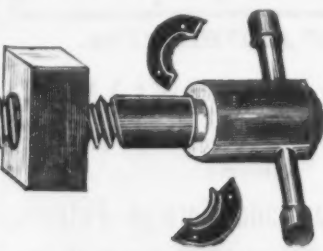
The 300 cutters of the Lamson & Goodnow Cutlery Works, at Shelburne Falls, who had been on strike for five weeks, returned to work last week on the terms offered by the directors, namely, a cut ranging from 10 to 15 per cent. The strike began when President Lamson announced a horizontal cut of 25 per cent.

At Worcester, on the 13th inst., a fire destroyed the shops of Alonzo Whitcomb & Co., machinists' tools; G. H. Bushnell & Co., machinists and press manufacturers, and badly damaged the Rice & Griffin Mfg. Co., manufacturers of sash, doors, blinds, &c.

CONNECTICUT.

The roof of the new Canfield Rubber Company, Bridgeport, is nearly completed. The exterior of the structure is the most ornamental for factory use in the city. At the northwest corner the mason work is carried up in the shape of a tower, and this is surmounted by a turret of considerable height.

The Winchester Arms Company, of New Haven, have abandoned their attempt to bore an artesian well for water, after going down 2400 feet without securing a supply. The contractor had reached this depth six months ago, when some evil-disposed person dropped about 50 feet of steel-boring tools down the well, causing an obstruction which persistent efforts have since failed to remove. Scientists are at a loss to account



for the absence of water at the great depth reached. The well is said to be the second deepest bore in this country.

NEW YORK.

A consultation of the different interests has been held at Newburg, and it is very likely that arrangements will be perfected by which the assignees of Ward, Stanton & Co. will be enabled to complete the Hoboken Land and Improvement Co.'s iron ferry-boats, Hopatcong and Musconetcong, on which some work had been done when the assignment was made. Two hundred or more men will then be put to work, and it will take three or four months to finish the boats. The assignee has not yet got his schedule made, but his counsel says that the liabilities are about \$125,000 only. The assets consist of a small amount of material and the plant. The firm consider the latter very valuable.

PENNSYLVANIA.

The Lehigh Zinc and Iron Company, at Bethlehem, on January 16 commenced blowing out their furnace for repairs. The company have had a very successful run for four years, manufacturing spiegeleisen.

Worth Bros., of Coatesville, have commenced running double turn at their Brandywine Rolling Mills. Charles Huston &

Sons are running the Lukens Mills, at the same place, full time, and there is some talk of the Coatesville Iron Company's mill being started at an early date.

The rolling mill of McLanahan, Smith & Co., at Hollidaysburg, has started up on full time, after a long suspension, and all hands are at work again. Their nail factory still remains idle, with no prospects of resuming.

The Fishback Rolling Mill, at Pottsville, idle for several weeks, owing to a lack of orders, has resumed work full-handed and on full time, with prospects of steady work.

Neshannock Furnace, of the Crawford Iron and Steel Company, Newcastle, blew in on January 13.

The Thomas Iron Company are preparing one furnace at Hokendauqua and one at Lock Ridge for blowing in, making five in blast at the former place and two at the latter.

Robert H. Coleman, of Lebanon, has commenced excavations for a new blast furnace near his No. 2 Colebrook Furnace. The new stack will be a large one.

The workmen at J. P. Witherow's hot-blast works, at Newcastle, have been notified of a 10 per cent. reduction all round, to take effect on January 18.

It is reported that the Lancaster Watch Works are to be removed to Chicago, overtures from capitalists of the latter city having been accepted by those interested in the plant.

On Saturday the stack of a heating furnace attached to the Blandon Rolling Mill blew down during the prevalence of an unusually violent wind storm. The stack was 50 feet high and was red-hot. It crashed through the blacksmith shop, but injured nobody seriously.

The Saucon Iron Company's furnaces and railroad, at Hellertown, were recently purchased at sheriff's sale by the Thomas Iron Company and Samuel Thomas, the holders of the first mortgage bonds. At Easton, on the 19th inst., a new company was formed, and Samuel Thomas, president of the Thomas Iron Company, was made president. It is to be called the Saucon Valley Iron and Railroad Company, and will have a capital of \$50,000. The directors are J. T. Knight, Samuel Drake, Charles Stewart, Daniel Runkle, W. W. Marsh and B. G. Clarke, all well-known iron men.

The man who makes arrangements every few years to move the Baldwin Locomotive Works out into the country is again at work. This time the works are to be transported bodily to "a point on the Schuylkill between Mt. Clare and Perkiomen." The strangest thing about this is that the proprietors of the works know nothing about the move and haven't any idea of leaving Philadelphia.

Leesport Furnace will be blown out some time next month, when extensive repairs to the furnace will be made.

PITTSBURGH AND VICINITY.

At Sharpshoof, on Monday, there was an explosion of natural gas in the mill store of Moorhead Brothers & Co., owners of the Vesuvius Iron Works. Immediately after the explosion the store and the mill offices took fire and were destroyed. The mill proper was saved with the greatest difficulty.

The Pittsburgh Steel Casting Company manufactured in 1884, besides steel castings and high-carbon steel, 3740 gross tons of low-carbon steel, to be used for deep stamping purposes, rivets and locomotive tubes, which must show a perfect weld and stand cold flanging. The carbon aimed at was about .10 and manganese about .35. Below we give the chemical results, believing these to be the most uniform successive 932 heats (except one red-short) on record of any kind of soft steel ever manufactured. There were not 50 pounds returned out of the 3740 tons, nor was the company asked to pay any damages for bad steel that was used for the purposes named above:

1884.	No. of heats.	Average carbon for each month.	Average manganese for each month.
January.....	34	.097	.326
February.....	74	.098	.328
March.....	123	.097	.319
April.....	79	.098	.313
May.....	96	No low heats made.	
June.....	66	.097	.381
July.....	68	.094	.390
August.....	143	.093	.380
September.....	140	.098	.348
October.....	7	.097	.350
November.....	81	.102	.343
December.....	87	.097	.330
Total.....	931		
Average of carbon for year.....		.094	
Average of manganese for year.....		.317	

A reduction of 10 per cent. in wages, recently announced by Dilworth, Porter & Co., Limited, affects certain employees who belong to the Amalgamated Association, and the latter have ordered a strike.

All the mills of Oliver Bros. & Phillips are at present at work. The employees of the Woods Run Mill, Allegheny, in view of the embarrassment of the firm, notified them that they were willing to go to work at the reduction against which they were striking, and the mill was accordingly started; and the Tenth and Fifteenth street mills, on the Southside, are in operation pending the decision of the Amalgamated Association regarding the reduction in the wages of the drag-downs.

A reduction of 10 per cent. was on January 13 announced in the wages of employees of the Iron City Chain Works, operated by McKay, Hammond & Co. There are 70 men and boys affected, 35 of whom refused to work.

The Westinghouse Air-Brake Company, as licensees protected by numerous patents, are now manufacturing and supplying gas regulators and cut-offs for the control of natural gas for mills and private houses, which they propose to furnish to all natural-gas companies on terms that will make their use general. It is believed that the economy in the cost of street mains and the safety insured to consumers will place all companies using these special devices in a more favorable position than those companies now delivering gas without such devices. The automatic regulators and cut-offs, both for

private houses and mills, insure a constant pressure in the house pipes unaffected by change of pressure in the mains, and, in the event of the supply failing in any way, the cut-off valves close, so that they cannot again be opened until all of the stop-cocks within the various houses or mills have first been closed—a feature absolutely essential for safety, and one likely to be made necessary by the action of the underwriters. These regulators are so constructed that a predetermined amount of gas per hour can be discharged, making them, in effect, regulators of pressure and of quantity. The company will also make regulators to reduce the pressure for illuminating purposes. These used with carburetors insure from natural gas a beautiful and steady light.

The mills of Kirkpatrick & Co., at Leechburg, and the Charters Iron and Steel Company, at Mansfield, have resumed operations and are running full in all departments. The firms have a fair number of orders, and will not close down their works until compelled to do so for want of business. No reductions of any consequence has been made in the wages of employees.

The Coal Trade Tribunal, which has been endeavoring for some time to fix the rate for mining in the railroad mines of this district, have failed to agree, and the matter will be referred to the umpire.

The Canonsburg Iron Works, which have been closed down for several weeks, were to resume on last Monday, running full in all the departments. The works were shut down in order to take stock and make improvements. A large addition was made to the mill. The firm have orders which will keep them busy for some time.

The Miller Forge Company, at Rankin Station, are making a steel shaft for a United States man-of-war, which will be completed in two months.

DELAWARE.

At Harlan & Hollingsworth's shipyard, Wilmington, the mail boat Cape Charles, which is to run between Cape Charles and Norfolk on the New York, Philadelphia and Norfolk Railroad, was launched last week. The boat is 262 feet long on the deck, 36 feet beam; breadth over guards, 64 feet; depth of hold, 14 feet. She is built extra strong, of iron, and is expected to make 18 miles an hour. She can carry two Pullman sleeping cars, an express car and a combination car on her deck, and is fitted up with saloon cabin, &c., and is to be handsomely furnished and illuminated by electric lights.

OHIO.

Etna Charcoal Furnace, at Ironton, ran 202 days the past year, and made 2317 tons, an average of 11.47 tons per day. The best run was during the month of December, 29½ days, when the product was 388 tons, or a daily average of 13.04 tons. The product was all A 1 cold-blast iron.

At a meeting of citizens and rolling-mill employees, on January 14, at Warren, a committee was appointed to solicit subscribers to a fund to start the Westlake Rolling Mill on the co-operative plan. It is stated that a proposition has been made to the assignee of the Westlake estate to lease the rolling mill for six months for the taxes and the cost of insurance, and that the assignee has expressed a willingness to accept the terms.

A moderately strong vein of gas has been struck at the well of the Belfont Iron Works Company, Ironton, at a depth of 202 feet. The vein is, of course, only a surface vein, but is a good indication of what may be expected at a greater depth.

Morgan Williams & Co., proprietors of the Steam Hammer Works, of Alliance, have paid off and dismissed 50 more of their men. About 150 men have been discharged from these works in the past three months. Only about one third of the regular force remain and they have been reduced to eight hours a day. Lack of orders is the cause of the reduction of force.

Emma Furnace of the Union Rolling Mill Company, Cleveland, which blew out December 6, is being relined. The job will probably be completed by February 1, when she will be started again.

The Flint glass manufacturers of Bellaire, Bridgeport and Martin's Ferry are conferring with their workmen with a view of arriving at a settlement of the differences that now exist as to the plan of working, which has caused the factories and workmen to be idle since December 16.

The Ironton furnace and rolling mill property, at Steubenville, has been sold by the sheriff to a Pittsburgh syndicate, who will wreck the mill and sell the machinery. The mill originally cost \$250,000, and was bid in for \$25,334.

The reduction of 10 per cent. in the wages of all employees not governed by the scale recently decided upon by the Youngstown rolling-mill proprietors went into effect on January 12. No reduction was made at the works of Brown, Bonnell & Co. The reduction was accepted by the workmen without objection.

The trouble between Summers Brothers & Co., of Struthers, and their employees has been amicably adjusted and their mill has started up. We are not advised as to what effect this will have upon the plan of the firm, recently mentioned in these columns, to convert their mill into a steel sheet mill.

The Youngstown Car Works have received several large orders and have increased their force.

ILLINOIS.

A galvanizing plant of 10 tons daily capacity has just been completed at Joliet, to run in connection with the Joliet Barb Wire Works.

The Springfield Watch Factory gave notice that two-thirds of their employees would be thrown out of employment after Saturday last. The factory usually employs 1200 hands, but has been in very unprosperous condition for some time, employing only 600 hands since September. This leaves only 200 hands now in employment.

The Chicago Screw-Driver Works have of late been filling large orders from Wm. R. Cummings & Co., London, England, and C. E. Jennings & Co., New York City.

There are being built at the Hercules Iron Works, Chicago, several 50-ton refrigerating machines. The working force of this establishment is to be increased.

Two hundred and twenty-five men are now employed in the new pipe-mill of the Crane Brothers Mfg. Co., of Chicago, which started up on January 5.

INDIANA.

The New Albany rail mills have resumed work after a long period of idleness. They are working on railroad spikes and small rails. Mr. Trinler, the manager, says that the cheap production of steel rails has run him out of the market on heavy railroad iron.

The New Albany Rolling Mill continues in full operation, mostly on orders. The mill is also replenishing its stock of merchantable iron, which had run down to very little on hand.

Chas. Hegewald & Co., of New Albany, are taking advantage of a dull season with them to have some extensive repairs and improvements done to their foundry and machine buildings.

MICHIGAN.

The production of the copper mines of Lake Superior for December was as follows: Calumet and Hecla, 2355 tons; Quincy, 260; Atlantic, 363; Franklin, 227; Allouez, 150; Huron, 120; Peninsula, 70; Hancock, 41.

MISSOURI.

Last week Leslie A. Moffett was appointed receiver of the Harrison Wire Works by Judge Lubke, of the Circuit Court. His bond was fixed at \$25,000. This action was taken under the application made by A. B. Hart, representing himself and certain other stockholders.

The Excelsior Stove Works, St. Louis, have resumed operations, employing about 50 per cent. of their usual working force, but expect to increase it to the full number very shortly.

The Pacific Barb Wire Company, of St. Louis, have begun the manufacture of hog wire.

The Missouri Furnace Company are, it is stated, contemplating the early starting of one of their blast furnaces.

Midland Furnace, at Midland, Crawford County, was to have blown in last week. The stack has been relined.

Sligo Furnace, in Dent County, is having a new hearth put in and will blow in again as soon as the repairs are completed.

KENTUCKY.

Bellefonte Furnace will stop operations the latter part of next month and not run any more this year.

Messrs. Sneed & Co., of Louisville, have just finished some heavy and elaborate architectural castings for Atlanta, Ga., most of it for the Kimball House.

ALABAMA.

The Alabama Great Southern Railroad Company have decided to increase their capital stock \$1,000,000. A portion of this will be used in the erection of large machine shops at Birmingham, which have for some time been in contemplation.

It is reported that a company has been organized at Oxana for the manufacture of steel. It is said that the stock has all been subscribed, and that the erection of large works will begin at once.

VIRGINIA.

The Lobdell Car Wheel Company, of Wilmington, Del., will not run their Brown Hill Furnace this year. Their Walton Furnace, which made 1554½ tons in 222 days of the year 1884, will make a full blast this year. White Rock Furnace, which ran but 30 days in 1884, will be in operation during part of 1885.

WEST VIRGINIA.

During the week ending December 31 the blast furnace of the Riverside Iron Works made an output of 1036 gross tons of No. 1 Bessemer pig. The furnace measures 75 x 17 feet, and has but recently attained this large production, which is entirely due to careful management and working.

The steel plant and nail factory of the Riverside Iron Works, Wheeling, which was idle last week, owing to a difficulty with the employees, started up on Monday, the Amalgamated Association consenting to the operation of the works pending the settlement of the dispute. The upper mill of the company, which makes bar iron and light rails, is also in operation.

TENNESSEE.

C. H. Beresford is opening for other parties an extensive coal mine at Anderson, and also a marble quarry. He reports that a bucket factory, a paint factory, a blast furnace and a short railroad will also be built.

A press telegram from Chattanooga, dated the 16th inst., says: "The industrial outlook is brightening very materially. The Citico (100-ton) Furnace, which has been out of blast for four months, began operations to-day and will make its first cast next Monday. Chattanooga Furnace, which has been out of blast two weeks, resumes on Monday. The forces of hands at the Alabama Great Southern car shops and at the Chattanooga cotton factory are being increased on account of impounding orders, and all the iron men report an extraordinary increase of inquiries from all parts of the country. Three saw-mills started up to-day and two more will start next week."

GEORGIA.

On the night of the 26th of last December the pattern and casting shops connected with Wm. Kehoe & Co.'s iron works at Savannah were destroyed by fire. At present the firm are only erecting temporary structures, and not substantial brick buildings, as incorrectly reported by some journals. Early in the spring, however, they propose to put up buildings of that kind.

A cable dispatch from London, dated the 10th inst., states that Sir William George Armstrong, the inventor of the famous Armstrong gun, is about to start large steel works near Naples.

Suspension of Oliver Bros. & Phillips.

At Pittsburgh, on the 15th inst., an announcement of suspension of payment was made by the firm of Oliver Bros. & Phillips, who are among the largest iron manufacturers of that great iron-making center. The announcement was made in the following form:

To our creditors: We are to-day compelled to suspend payment, and propose calling immediately a meeting of those interested, to whom we believe we can show assets amply sufficient, with some indulgence, to pay every dollar of our liabilities.

OLIVER BROS. & PHILLIPS,
OLIVER & ROBERTS WIRE CO. LIMITED.

The members of the firm are also interested in the Isabella Furnace Company and H. B. Scott & Co., Limited, the latter firm being extensive manufacturers of bar wire, but it is stated that these two establishments are not involved in the business troubles afflicting the two firms whose names are appended to the foregoing notice. Advice from Pittsburgh says that it is impossible to guess at the liabilities of the firm. They are reported at from \$3,000,000 to \$5,000,000. Bankers say there is about a million or a million and a half of paper held at Pittsburgh, with good collateral for almost all of it. Large blocks of the paper are held in the Eastern States, as far east as Massachusetts, while very large sums are carried in New York and Philadelphia. The firm have made large investments in real estate, and have an immense amount of collateral of various kinds.

The history of the rise of the firm of Oliver Bros. & Phillips is one of the most remarkable in the annals of the country. Seventeen years ago H. W. Oliver, Jr., John M. Phillips and William J. Lewis entered into a partnership for the manufacture of iron. The business career of H. W. Oliver, Jr., up to 1867 had embraced the performance of the duties of shipping clerk for Graff, Bennett & Co., of Pittsburgh, and the filling of a clerkship under William Thaw in the employ of the Pennsylvania Railroad Company. Phillips was a bricklayer and Lewis a practical ironworker. They built a small mill at the south end of the Tenth street bridge. Oliver kept the books, while Lewis and Phillips looked after the practical part of the work. Their outfit consisted of two puddling furnaces and one heating furnace, and the product was wheeled away on barrows. From this humble beginning has grown the great firm of Oliver Bros. & Phillips, which now employ over 4000 men, principally in the Allegheny, Monongahela and Birmingham iron works, situated at Wood's Run, Allegheny City and at Tenth and Fifteenth streets, Southside, Pittsburgh. In these mills are produced bar, plate and angle iron, skelp iron and light T-rails. Part of their rolled iron they work into heavy hardware, such as bolts, nuts, washers and hinges, wagon fittings, &c. Altogether they have 107 single puddling furnaces, 23 heating furnaces and 14 trains of rolls, their annual capacity for the production of rolled iron aggregating 97,500 net tons.

Their success in the manufacture of iron led them to make ventures in other directions. One was the manufacture of bar wire, into which they entered quite extensively. About 18 months ago H. W. Oliver, Jr., visited England, and on his return he imported workmen and erected a steel mill, containing a Clapp & Griffith's 2 ton Bessemer converter. The present members of the firm are H. W. Oliver, Jr., D. W. Oliver, George Oliver, J. B. Oliver, J. M. Phillips and several relatives of the original proprietors. Harry W. Oliver, Jr., is the best-known member of the firm outside of Pittsburgh, by reason of his candidacy for United States Senator in 1881 and his membership of the Tariff Commission. His railroad speculations have been on a large scale, and he is said to have made \$400,000 in a single venture in Lake Shore stock alone. The opinion is general that the creditors of the firm will act leniently with the embarrassed manufacturers, and that their extensive property will not be sacrificed by a forced settlement of their affairs. If left in the hands of the firm, they will doubtless be able to so manage it as not only to pay all their obligations in time, but to retain their own well-earned investments.

TRADE PUBLICATIONS.

Rails, Switches, Frogs, &c.

We have received from the Pennsylvania Steel Company, of Steelton, Pa., two descriptive and illustrated catalogues of their manufactures. One of the catalogues, which has reference only to the various sizes and shapes of steel rails which they make, is a very elaborate and valuable trade publication. It is a pamphlet some 6 1/2 x 11 inches in size, bound in cloth and containing over 100 pages. The first few pages are devoted to a description of the works of the company, which comprise an open-hearth plant and blooming mill, Bessemer steel plant, blast furnaces, merchant rolling mill and a frog switch and signal department, besides a repair department which includes a number of different shops. In connection with their works the Pennsylvania Steel Company in 1882 erected a handsome school building to provide for the education of the youth of their employees. The remaining pages, which constitute the greater part of the pamphlet, are devoted to rail sections, showing the rails in full size, and giving the weight, dimensions and exact shapes of the different rails. Every alternate page illustrates a rail section, and opposite it are given a list of the railroads on which the rails are used. The rails, inclusive of those employed on street railways, are made in sizes varying from 7 to 20 pounds in weight per yard, the smaller sections being for mine use. While the descriptive matter in such a catalogue is necessarily restricted to a simple statement of weights and dimensions, the information contained is nevertheless of great value, as the efficiency of the different rail sections may be compared, so far as is possible outside of actual practice. The second catalogue, which is descriptive of switches, frogs, crossings, signal appliances and the various other safety appliances manufactured by this company, is very profusely illustrated, and contains complete and full descriptions of the above-mentioned and

many other railroad fittings. In the absence of more specific literature on the subject these two pamphlets would constitute a valuable treatise on rails and railroad appliances of the kind enumerated.

Obituary.

PROF. WILLIAM WAGNER.

Prof. William Wagner, founder of the Wagner Free Institute of Science, in Philadelphia, and confidential associate of Stephen Girard, died at midnight of Saturday, at his home in that city. He had attained a remarkable age, lacking only four years of a century, and he retained his faculties almost to the last. Death was caused by a gradual wearing out of the vital powers. Professor Wagner was a well-known figure in Philadelphia life, and of wide repute both in this country and abroad. His father was a well-known merchant of Philadelphia. The son just deceased was born at the latter house. He had two brothers, Tobias and Samuel. William and Tobias were apprenticed at an early age to Stephen Girard, and the former was employed for many years in Girard's counting-room. When he attained his majority he was sent on several voyages in charge of Mr. Girard's vessels, and made trips to Borneo and Java. Soon after this he went into business for himself, being engaged in the naval stores trade. He also established extensive mills near Wilmington, N. C. Later he was engaged in coal mining in the interior of Pennsylvania.

In 1835 he retired from business, having amassed a fortune in the neighborhood of \$500,000. About this time he married a Miss Louisa Binney, the daughter of Archibald Binney, of the firm of Binney & Rowlandson, type founders. He met his wife in Maryland while on one of his numerous trips undertaken for the collection of minerals. About this time he turned his attention almost wholly to scientific subjects, and took great delight in pursuing studies of this kind. Probably this bent of mind was largely due to his associations with Stephen Girard. He became impressed with the idea of establishing a scientific school, and his first step in this direction was taken shortly after his marriage. He purchased the large lot at Seventeenth street and Montgomery Avenue, for which he gave \$7000. This property is now worth \$200,000. On this he erected a small museum where he collected scientific curiosities and lectured on mineralogy, geology and conchology. The lectures were very popular and the building was soon too small to accommodate the audiences.

In 1860 he made an unsuccessful effort to buy Spring Garden Hall, at Thirteenth and Spring Garden streets, and finally erected the present museum building at Seventeenth street and Montgomery Avenue, a large rectangular building, completed and dedicated to science in 1864. Here nightly lectures have been given during six months of the year, on various scientific subjects, and the collection of specimens has steadily grown. The collection of minerals and anatomical specimens is especially fine. It includes some exceedingly handsome amethysts. The collection of physical apparatus is extensive and historic in character. Professor Wagner was wrapped up in his work, but was possessed of many rare social qualities and furnished with a rare fund of anecdote. He was president of the institute. The trustees are Samuel Wagner, his nephew, Robert Cornelius, Joseph Wilcox, Dr. T. K. Eskridge and others. By his will all his property is left in trust to the institute.

DELAPLAINE M'DANIEL.

We have to record the death of Delaplaine M'Daniel, senior member of the old firm of M'Daniel & Harvey Company, of Philadelphia, everywhere known in the metal trade. Mr. M'Daniel was among the first to introduce galvanized iron in the United States, and the firm with which he has been identified at least 30 years has always maintained a foremost position in the trade. Their works in Delaware are extensive, comprising a valuable plant. Mr. M'Daniel has been in declining health for several months, apparently suffering from diabetes or some kindred disease, so that, although naturally inclining to corpulency, his weight when in this city a few weeks ago was reduced to less than 100 pounds. His death occurred yesterday morning, at the age of 67. Highly esteemed, widely useful, and actuated by the highest sense of probity in all his transactions, his death will be sincerely lamented. Few citizens in mercantile life among those who survive will leave a more honorable record.

Shipbuilding in Great Britain.—The *British Trade Journal* says: Shipbuilding has as yet received but little stimulus from the Government decision to build new vessels. Reports from Glasgow, Newcastle and other centers indicate a considerable falling off in the tonnage built during 1884, but at Liverpool it is about 2000 tons in excess. Here, however, the prospect for the coming year is by no means any brighter. At Newcastle-on-Tyne, on the contrary, there are at length some prospects of an improvement in business, several orders having been recently received, and a new yard at Pelaw Main, which has been in a state of idleness since the commencement of the depression, is about to enter upon active work. Wages in the shipbuilding yards are lower than ever.

Valve Patent Suits Decided.—At Washington, on the 19th inst., a decision was rendered by the Supreme Court of the United States in the two patent cases of the Consolidated Safety Valve Company, of Hartford, Conn., appellants, against the Crosby Steam Gauge and Valve Company—appeals from the Circuit Court of the United States for the District of Massachusetts. There were suits brought by the appellants against the appellees for alleged infringement of two patents granted to George W. Richardson on September 25, 1866, and January 19, 1869, for certain improvements in safety-valves. The defense set up by the Crosby Company was want of novelty in Richardson's alleged inventions. The court

below held the defense good, and dismissed the Consolidated Company's bills of complaint, on the ground that Richardson's patents were invalid. This court reverses that decision, and holds that Richardson's inventions had not been anticipated by others, and that he was "the first person who had made a safety-valve which, while it automatically relieved the pressure of steam in the boiler, did not in effecting that result reduce the pressure to such an extent as to make the use of the relieving apparatus practically impossible, because of the expenditure of time and fuel necessary to bring up the steam against the proper working standard." His patents are held by this court to be valid, the valves made by the Crosby Company are declared to be infringing, and the decrees of the Circuit Court are reversed, with directions to award an account of profits and damages on the patent, whose term has expired since this suit began, and to award a perpetual injunction on the other patent. Opinion by Justice Blatchford.

NEW PUBLICATIONS.

COURS D'EXPLOITATION DES MINES. By HATON DE LA Goupillière. Volume II. Size, 10 x 6 1/4 inches, 889 pages. Published by Dunod, Paris.

The first volume of this valuable work, which was noticed in our issue of March 6, 1884, dealt more particularly with the opening of mines, extraction of ore and underground haulage. The second volume, which we have just received, is a continuation of the former work, and describes the hoisting of ores from the mine, the methods of freeing mines of water, and the systems of ventilation. The present volume comprises the sixth, seventh, eighth, ninth and tenth parts, covering the following subjects: Hoisting, draining, ventilation, miscellaneous, and the dressing of ores. Each part is divided into a number of chapters, which means the various systems and methods described are very conveniently classified. Under the heading of miscellaneous the different systems of lighting mines, and the apparatus and appliances used for that purpose, are discussed at considerable length. The subject of ore dressing, with which the volume closes, is very fully treated, over 200 pages being devoted to it alone. The book, which is bound in paper, is printed in a very excellent manner, and is very fully illustrated, the superior execution of the engravings deserving special mention.

Bloodshed Feared in the Hocking Valley.—The weakness of the Ohio State Government is likely to lead to serious results, if recent advices from the Hocking Valley are to be given full credit. It is said that the most active preparations for war are going on among the lawless element, with scarcely any attempt at concealment. Within the past 10 days over 2000 repeating rifles and more than 40,000 rounds of fixed ammunition, bought with the money that charitable people contributed to relieve the destitution of the miners' wives and children, have been shipped into the valley and distributed. Company organizations have been openly formed and battalion drills are announced to take place. A recent press telegram says: "There are good reasons for believing that the worst communistic leaders of New York, Chicago and other cities are in the Hocking Valley superintending the preparations for war, and the uprising is probably intended to be more far-reaching than the most apprehensive even yet suspect. If surface indications go for anything, and unless there is a sudden change in the Hocking Valley, it may safely be predicted that the people of the whole country will one of these mornings be shocked with the details of battles fought between the State troops of Ohio and a drilled and well-equipped army of law-breakers." The Governor of Ohio is now preparing to meet the emergency, but it is patent to all that vigorous measures a few months ago would have averted the danger of such a catastrophe as is now foreshadowed.

Mexican West Coast Trade.—Trade with the west coast of Mexico has been made available to American manufacturers from February 1 by a contract signed on the 14th inst., at the City of Mexico, by the attorney of the Atchison, Topeka and Santa Fe Railroad and the Mexican Minister of the Interior. From the port of Guaymas, the Gulf terminus of the Sonora Railroad, the company will be allowed to run a steamer under the American flag to all Gulf of California ports, carrying the Mexican and American mails. The trade has heretofore been restricted to vessels sailing at irregular intervals, flying the Mexican flag. The company's vessels will run through to San Francisco only three months, but will make regular connections each trip with the Pacific Mail steamers at Acapulco for San Francisco.

Recent Foreign News.—The British Admiralty has invited tenders of the shipbuilders at Belfast for the immediate construction of six cruisers. An association called the Transatlantic Commercial Society has been formed in Hamburg with a capital of 2,500,000 marks. The Deutsche Bank of Berlin has purchased \$1,400,000 worth of the second mortgage bonds of the Northern Pacific Railroad. A company styling itself the British Congo Company has been formed in London. The capital is fixed at \$2,500,000. Messrs. Jacob Bright, Houldsworth and other members of the House of Commons are among the directors.

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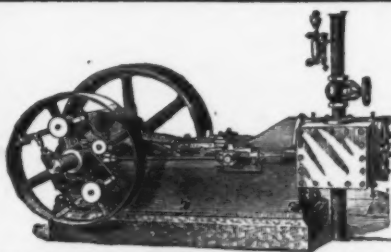
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GENTLEMEN:

We have had in use one of your 8" x 9" Horizontal Automatic Cut-off Engines since June 26, 1884, operating Dynamos supplying 60 to 100 incandescent Electric Lights both day and night. The engine was used also for a short time in making tests of a 300 Electric Light Dynamo machine, and developed for a portion of the time thirty-nine and four-tenths (39.4) horse-power. The engine has operated to our entire satisfaction. Yours very truly,

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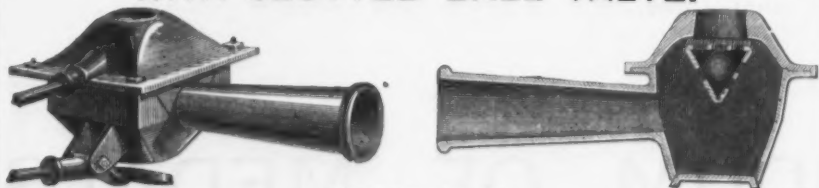
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New Rope Factory in China.

Messrs. Wilson & Roake, manufacturers of machinery, Front and Dover streets, New York, have recently erected a rope factory at Hong Kong for the Hong Kong Rope Mfg. Co. Limited. Mr. J. H. Wilson, of the above firm, went to China to superintend in person the erection of the machinery and the starting of the works, which are now in successful operation, having turned out their first coil of rope on November 26. The works are under the superintendence of Mr. J. M. Scudder, who formerly held a similar position in this country. The factory building, which consists of one continuous ground-floor compartment, with engine and boiler rooms attached, is a substantial brick and stone structure, 200 feet long by 100 feet wide, independently of the engine and boiler rooms. The light and ventilation throughout are excellent, and extra precautions have been taken to guard against fire. The machinery comprises one horizontal tubular boiler constructed by the Hong Kong and Whampoa Dock Company from drawings furnished by Messrs. Wilson & Roake; a Corliss automatic cut-off engine of 100 horse-power, built by the firm, and numerous machines of various kinds for use in the different processes of rope manufacture. The power which drives the machinery is transmitted by a 20-inch belt, 90 feet in length, from the main driving wheel of the engine, 12 feet in diameter, to a 5-foot pulley on the first line of shafting, the second line of shafting being driven by a 15-inch belt, 106 feet long. The two main lines of shafting are 400 feet in length, 3 inches in diameter, and revolve at a speed of 187 revolutions per minute. Seven thousand four hundred feet of belting are required to drive the machinery in the factory. The whole of the machinery is of the most modern type, and embraces all the latest patents and improvements.

There are three stages in the process of manufacturing the rope, for which there are three distinct departments—the preparing, the spinning and the “laying” or rope-making departments—each of which has its set of machinery. The first two are situated at the western end of the factory, one on either side, and the other at the eastern end, on both sides, a clear space running through the center of the building. The bales of hemp are received at the west end of the factory, where they are opened and the hemp oiled. It is then passed through a series of preparing machines, the object of which is to hackle the hemp and straighten the fibers, forming it into what is technically known as a “silver.” This is then taken to the spinning department, where it is converted into yarn in the spinning-jennys and wound on bobbins. There is a double row, 125 feet long, of spinning-jennys in the factory. The bobbins are next conveyed to the third or rope-making department, where the yarn is operated upon in the various machines and formed into strands, these afterward being “laid” into rope of the required thickness. The rope is then taken from the machines, reeled off into coils and delivered, ready for the market, at the opposite end of the factory to that at which the hemp was originally received. The machinery is capable of making rope from 1/4 inch to 10 inches in circumference. When working to its full capacity the factory will turn out 10 tons of rope per day, and provision has been made for doubling the production should the demand at any time render such a step advisable. With regard to native labor, the company were fortunate enough to secure the services of a number of skilled Chinese workmen from a rope manufactory in San Francisco, and, in consequence, the starting of the factory turned out a much easier task than was at first anticipated.

Electro-Dynamics.

The January number of *Mechanics* has another communication on the above subject from Mr. John W. Nystrom, of Philadelphia, which we give below:

Although it is not expected that our well-established unit “horse-power” will be disturbed by the proposition of Mr. W. H. Preece, F.R.S., it is proper to consider what the effect of such a change would be. Mr. Preece proposes to increase the unit horse-power from 33,000 to 44,233 foot-pounds per minute, in order to accommodate the anomalous C. G. S., or Centimeter Gram System.

In a paper read before the British Association at Montreal by Mr. Preece, the following table of units compared with C. G. S. was given:

Horse-power, 33,000 foot-pounds per minute.
Horse-power, 550 foot-pounds per second.
Horse-power, 75.9 kilogrammeters per second.
Horse-power, 1,01385 force de cheval.
Horse-power, 746 x 107 ergs per second.
Horse-power, 0.746 metric horse-power.
Horse-power, 746 Watts.
Force de cheval, 75 kilogrammeters per second.
Force de cheval, 512.48 foot-pounds per second.
Force de cheval, 0.9893 horse-power.
Force de cheval, 736 Watts.
Watt, 0.0013406 horse-power.
Watt, 0.1029 kilogrammeter per second.
Watt, 3.77 ergs per second.
Watt, 0.338 foot-pound per second.
Metric horse-power, 1000 Watts or 44,233 foot-pounds per minute.
Metric horse-power, 1.34 horse-power.
B. of T. unit, 1000 Watts per hour.

It will be observed by inspection of the above table that there is no regular system about it, but it is full of incongruous numbers, even within the C. G. S., and it is therefore unsuitable for practice, and a retrograde movement in metrology which ought not to be tolerated in our day's state of science.

There is one important consideration connected with the above table which has been neglected by Mr. Preece, namely, that the data given therein will hold good only in such localities where the acceleratrix of gravity is 9.81 meters per second; but as the acceleratrix varies with the latitude and height above the level of the sea, his table will not hold good without correction for gravity; and if we are to accept that table as constants all over the world, then the constancy of the dyne-force is thrown overboard. Mr. Preece's statement that “C. G. S. is a system of absolute measurement” will not be correct.

Whether or not the metric system is adopted by the English speaking nations, the

changing of the horse-power as proposed by Mr. Preece would only be an anomaly with out utility, because the C. G. S. does not conform with the metric system nor with any other established system in the world.

Mr. Preece has repeated several times in his lectures that “I cannot help thinking that the good work of the B. A. committee will not be complete until the C. G. S. system is authoritatively applied to work and power.” The intention of the B. A. committee is no doubt a good one, but, unfortunately, that committee has in this exceptional case got on a wrong track, for if the C. G. S. should take root it will grow as a weed in the field of science.

The British Association is organized for the noble purpose of *advancement of science*, in which field of labor wonders have been accomplished to the benefit and progress of mankind, and that Association has now an excellent opportunity of making a further advancement of science by withdrawing the C. G. S.

Barb-Wire Fence Destroyers.

The following Associated Press dispatch will be perused with interest by such of our readers as are interested in the manufacture or sale of barb wire:

LAS VEGAS, NEW MEXICO, January 14.—Fence-cutting is going on in Colfax County at a most destructive rate under a strong organization. An almost unbroken line of wire from the Ponce to the Teguiguiste, 90 miles, has been cut. The heaviest sufferers are: The Red River Cattle Company, 4 miles; Col. J. S. Taylor, 20 miles; W. Miles, 4 miles; J. W. Keller, 6 miles; Francis Clutten, 15 miles; J. G. Duncan, 5 miles. The work on the fences of the Dubuque Cattle Company began last night, and they will lose 10 miles of wire. The cutters are not known. Should their identity be established there would be a bloody war, greater in fatality than the famous county war, years ago. Some of the sufferers, particularly M. M. Chase, manager of the Red River Company, are very much worked up over the breaks made by the wire-fencers, and threaten to put armed men along their fences and protect their pastures at all hazard. The work of the fence-cutters was as systematic as the workings of a metropolitan police force. Each man was mounted, and they were placed in squads of convenient numbers. The squads would ride up to the fences, a man would drop out at a corner and cut for the extent of 1/4 mile or more, up to where another fellow had begun work, then jump into the saddle and rush to the head of the line again, after the style of school boys playing leap-frog. They cut the panels in the middle, leaving not one solid panel along the entire line of devastation. This is done because heavy cattle owners fence more ground than their deeds call for. In so doing they keep cattle on the public domain from getting at the water, for the want of which they drift against the fences and die from thirst. Three hundred and fifteen head of cattle died along Colonel Taylor's fences last spring, which goes to show the evil of barbed wire in endless lengths. Senator Dorsey, who owns 60 miles square of fenced lands at Palo Blanco, addressed the cutters at Springer yesterday, and said to them that if they would inform him when they got ready to begin operations on his wire he would take it down voluntarily and reel it up, thus saving tons of barb wire that would otherwise go to waste. They said they would give him notice in time to save trouble.

Working Old Steel Rails.—The *Register*, of Ironton, Ohio, says in a recent issue: “We alluded last week to the Iron and Steel Mill experimenting upon the reduction of steel rails to billets, by a new process. Heretofore it has been impossible to convert a rail into a billet without maintaining splits and crevices in the billet, which would, of course, reappear at every stage in succeeding manufacture from a tire to a wire. This was a fatal imperfection. Some parties in Ironton are the assignees of a patent obtained in England for special rolls to conduct this transformation and at the same time prevent the recurrence of the split in the rail. The experiments at the Iron and Steel Mill succeeded admirably. Their billet is sound and solid, and horseshoes, tires, nails, rods, &c., made from it are perfect. They have at the mill numerous articles into which the old steel rail has been transformed, and many samples of their billets and manufactured steel have been sent to consumers for inspection and trial.”

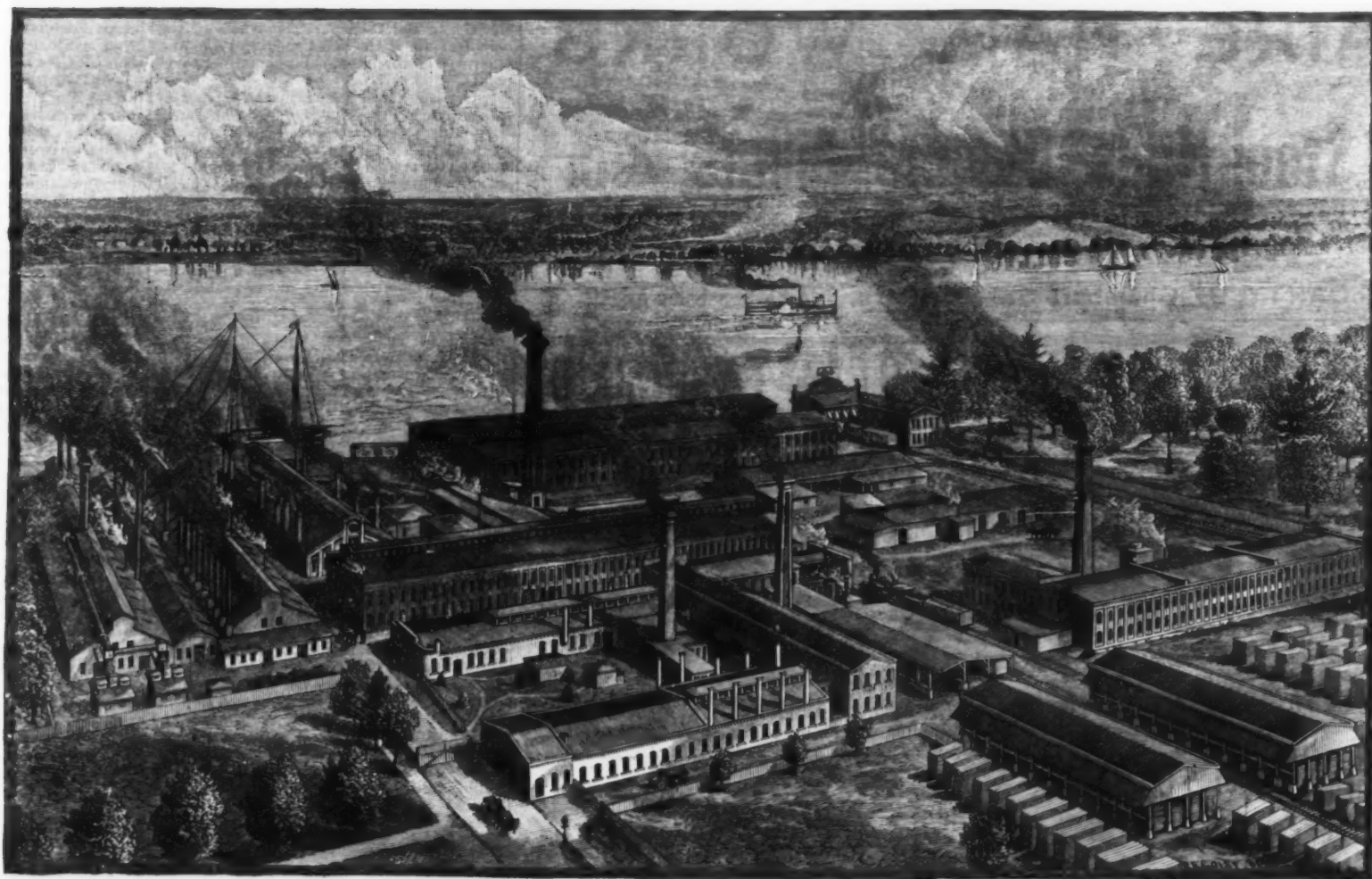
Our Precious Metals.—Vice-President and General Manager John J. Valentine, of Wells, Fargo & Co., has prepared the annual statement of precious metals produced in the States and Territories west of the Missouri River (including British Columbia and receipts by express from the west-coast States of Mexico). It shows aggregate products for 1884 as follows: Gold, \$26,246,542; silver, \$45,799,069; copper, \$6,086,252; lead, \$6,834,091; total gross result, \$84,975,954. California shows a decrease in gold of \$944,703, and an increase in silver of \$513,597. In Nevada, the Comstock shows an increase of \$1,668,524; Eureka district shows a decrease of \$123,152. In the total product of the State there is an increase of \$117,318; Montana shows a considerable increase; Colorado and Arizona a decrease from the production of 1883. The exports of silver during the year to Japan, China, the Straits, &c., have been as follows: From London, \$40,221,658; from Marseilles, \$1,361,250; from Venice, \$130,680; from San Francisco, \$13,993,990; total, \$55,617,578.

A Slight Concession on Coal.—The owners of blast furnaces on the line of the Philadelphia and Reading Railroad Company and its branches, who recently appealed to the company for some concession to them in the price of anthracite, have received an answer. They are made a total concession of 25 cents per ton, which is divided between the Railroad Company and the Coal and Iron Company. The former takes 5 cents off the tolls, and the latter 20 cents off the price of the coal. The pig-iron manufacturers declare that the concession is not satisfactory, and that it must be made 50 cents per ton. It dates from January 1.

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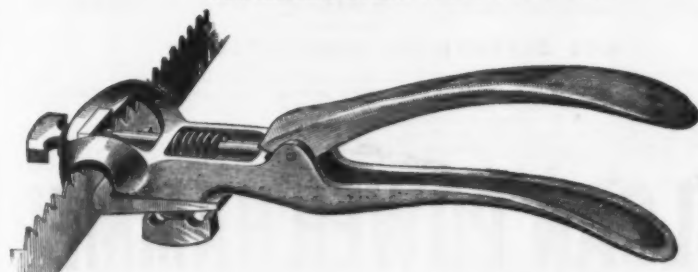
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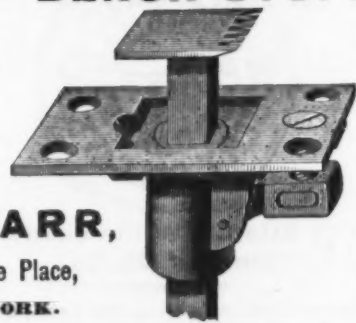
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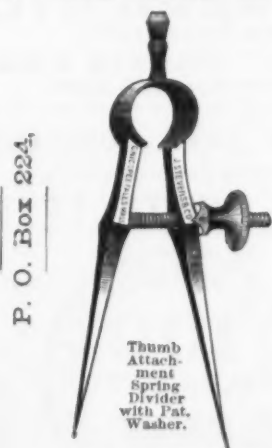
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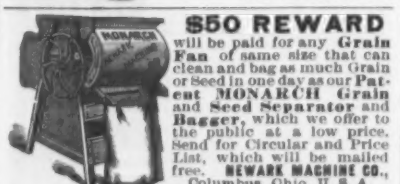
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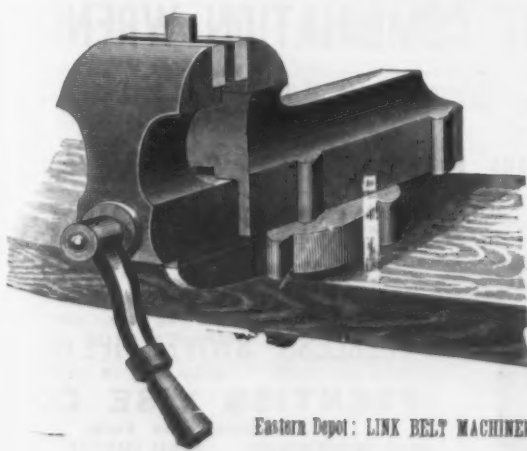
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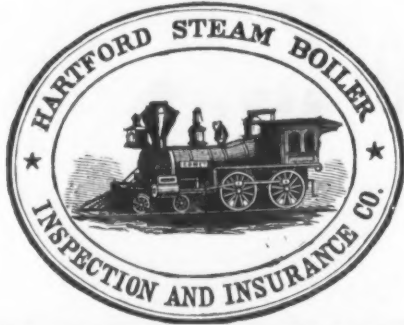
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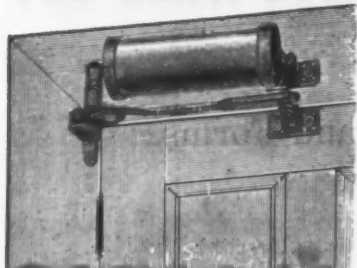
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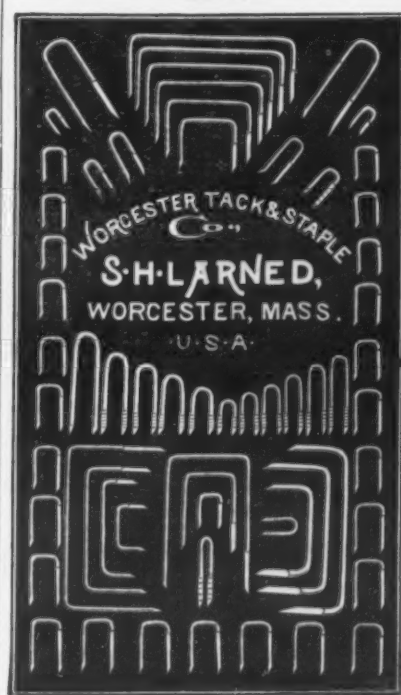


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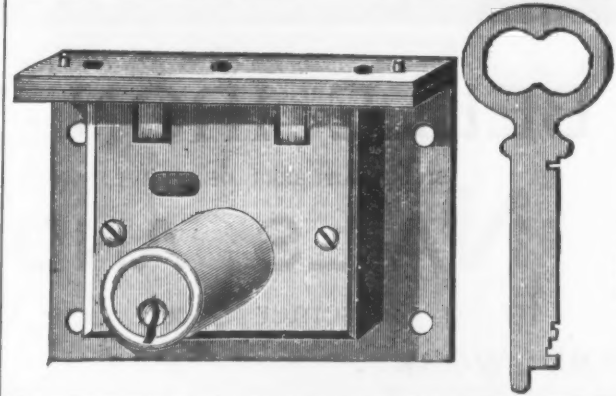


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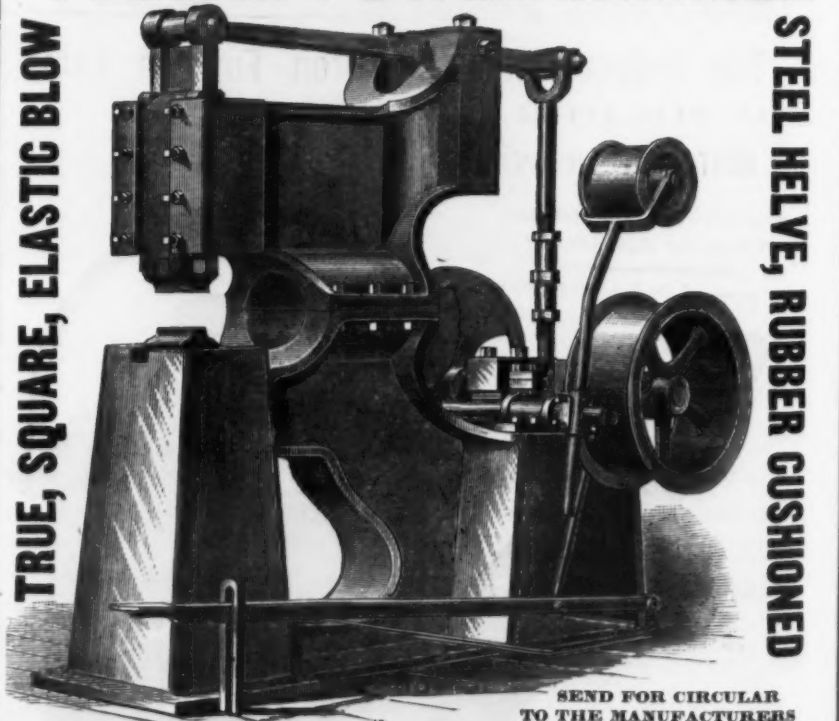
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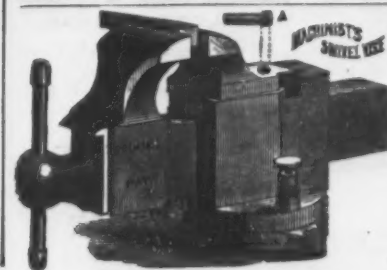
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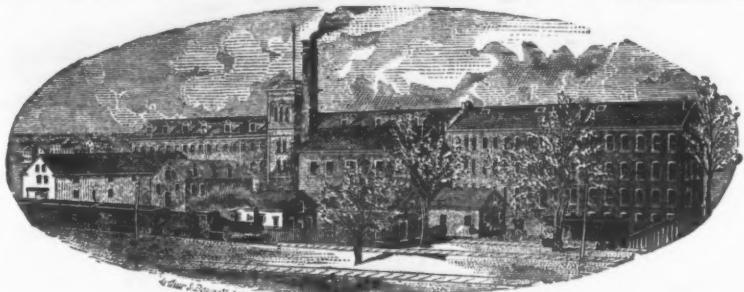
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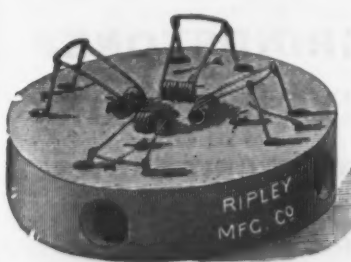
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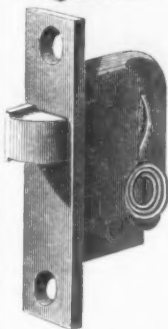
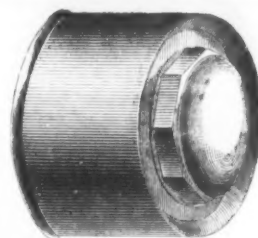
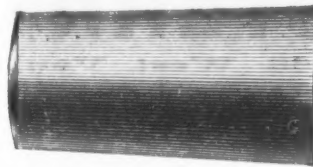


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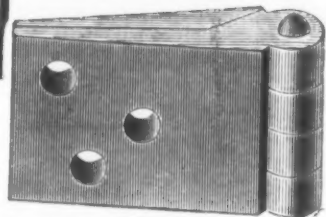


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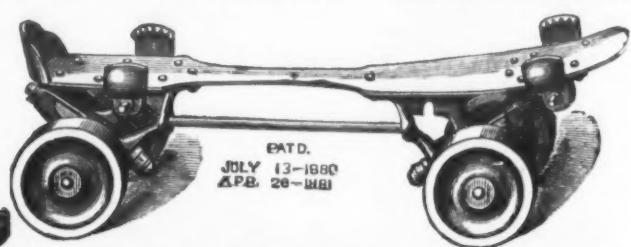
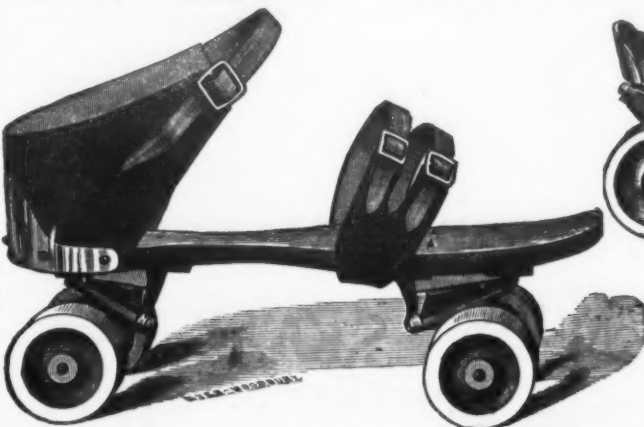
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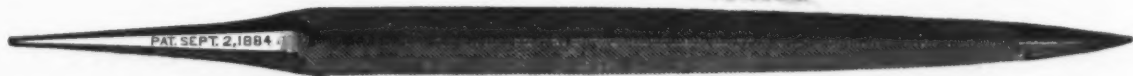
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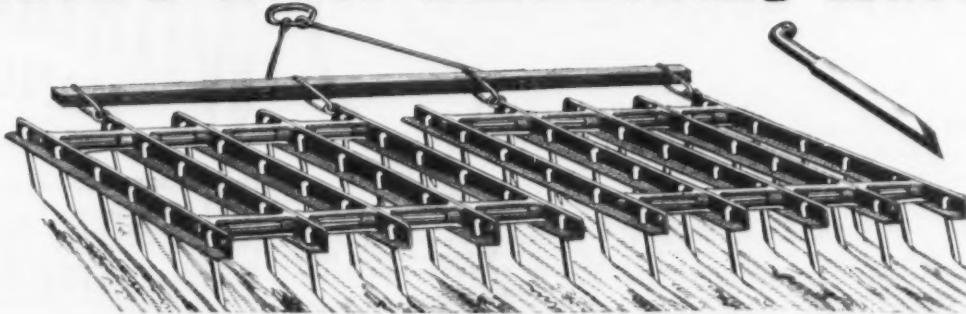


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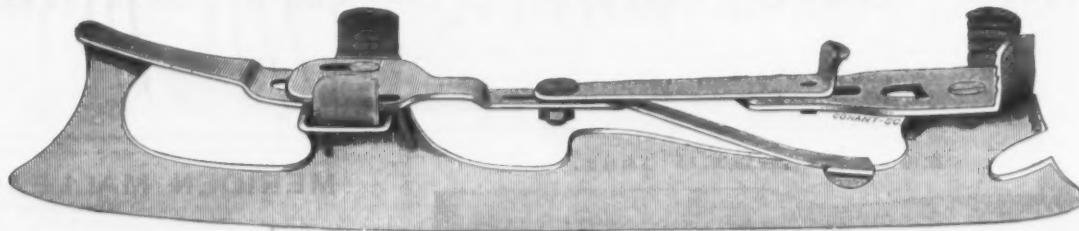


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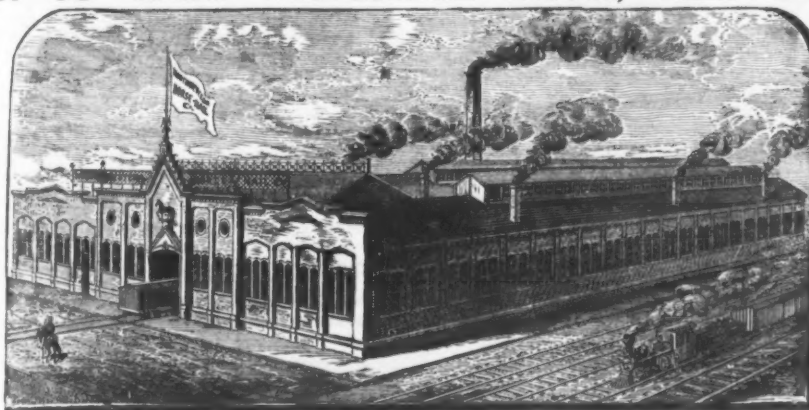
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Yours respectfully,
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NEW ORLEANS, LA., Oct. 27, 1882.
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ROLLER SKATE We have had ten years' experience in Roller Skating in many different countries, during which time we have seen and tested a hundred or more different patents. We have had your Skate in daily use now over two months, and have therefore given it a good, FAIR TRIAL, and can honestly assert it to be superior to any we have used before. We are, dear sir, yours faithfully,
LANE BROS., (English Professionals of London), English Roller Skaters, with W. W. Cole's Circus, U. S. America.

PRAIRIE DU CHIEN, Wis., Sept. 3, 1882.
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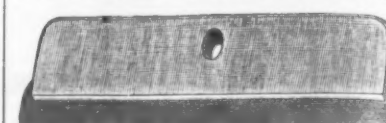


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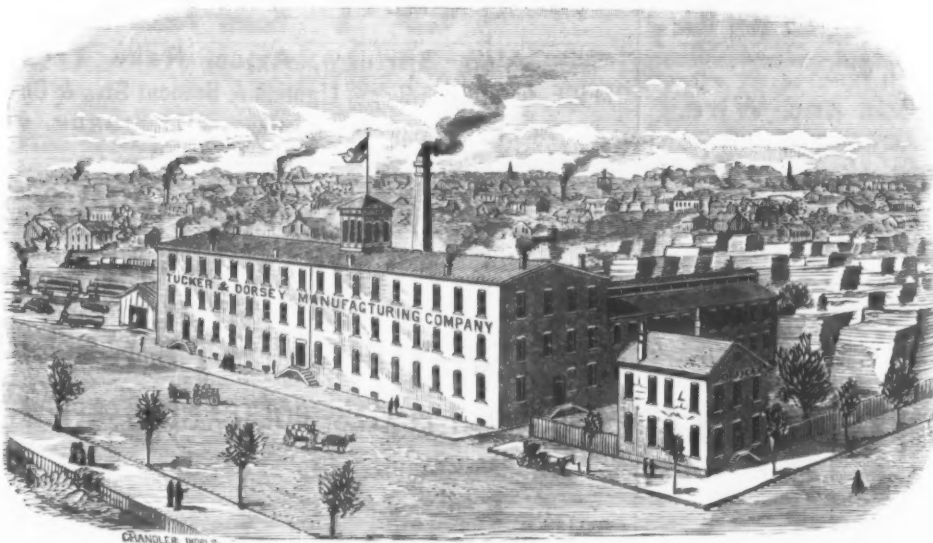
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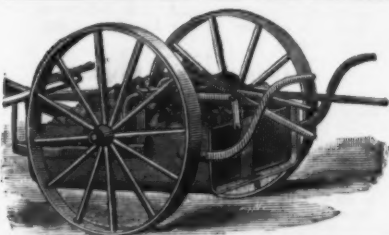
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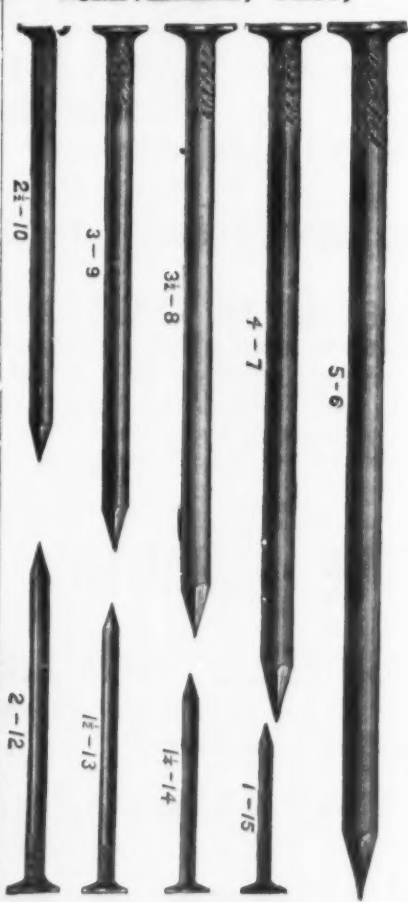
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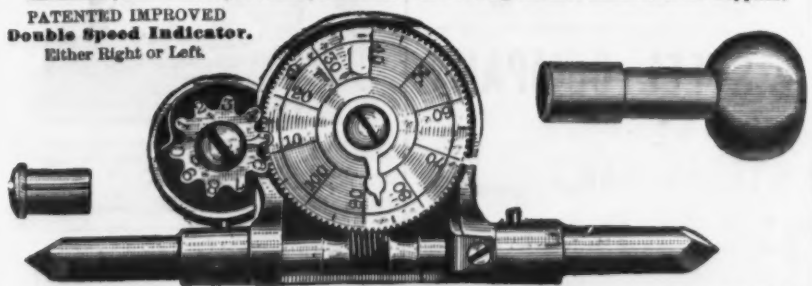


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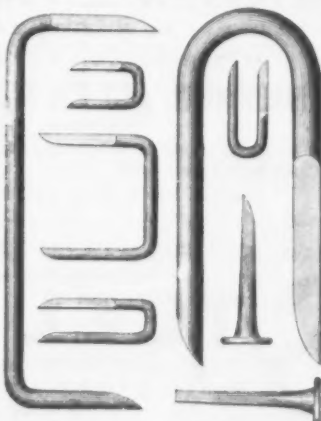


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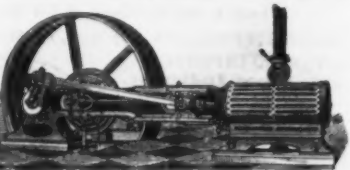
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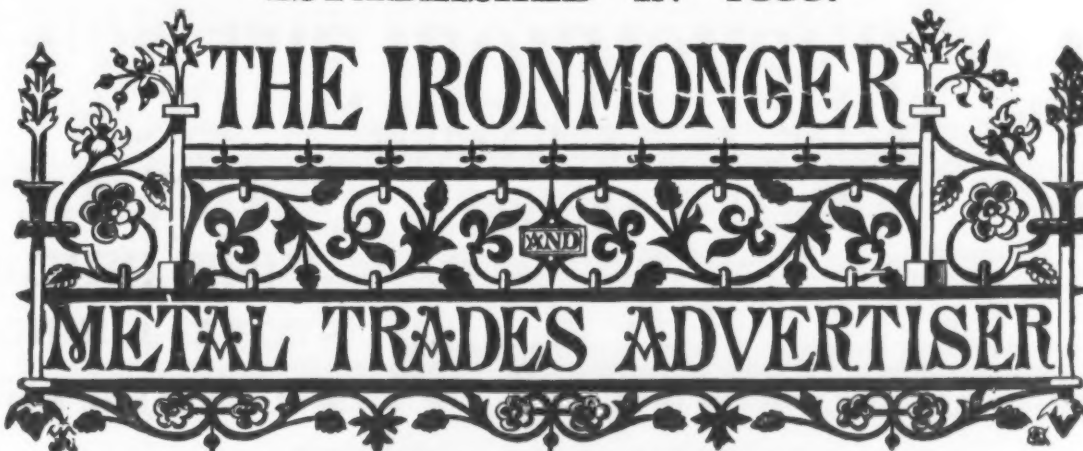
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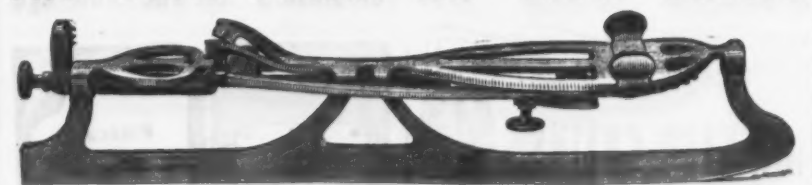
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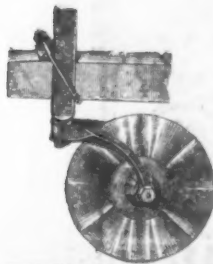
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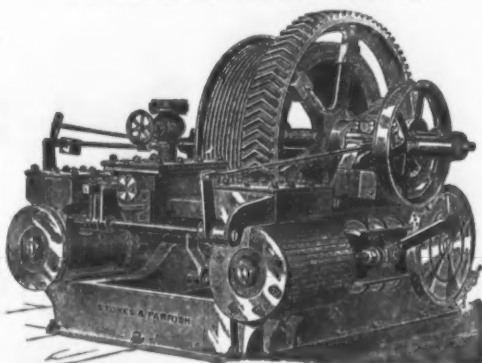
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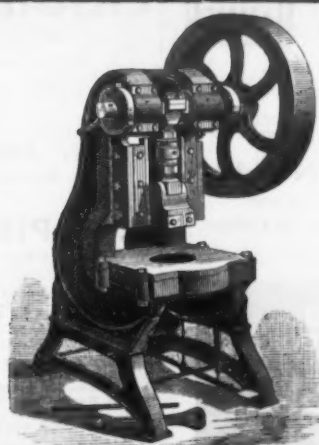
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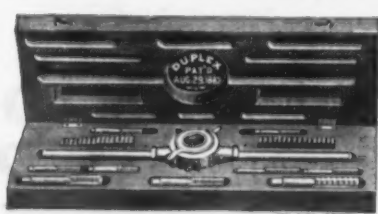
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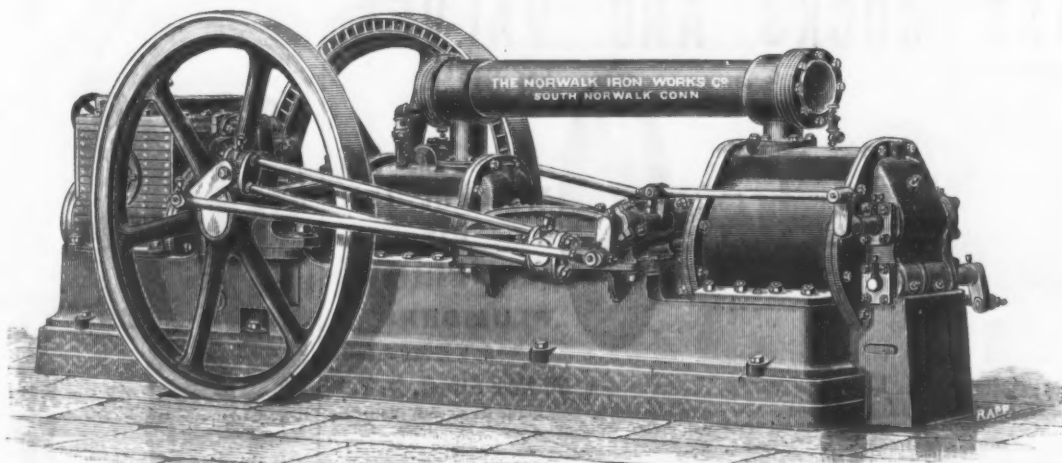
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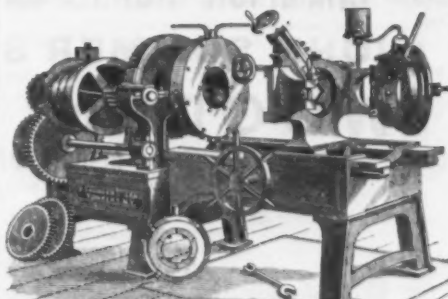
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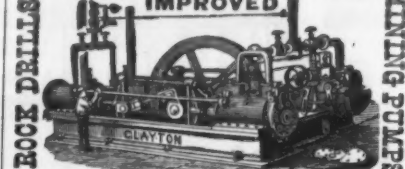
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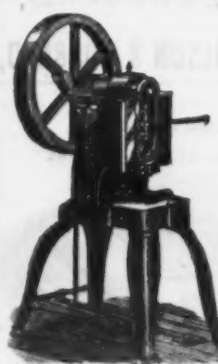
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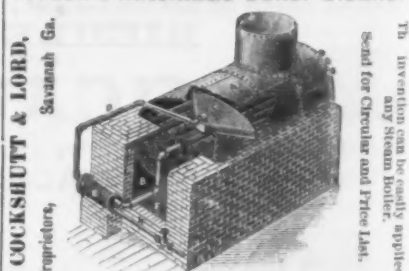
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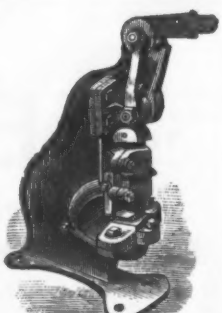
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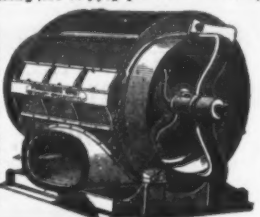
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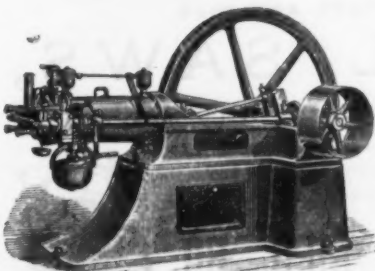
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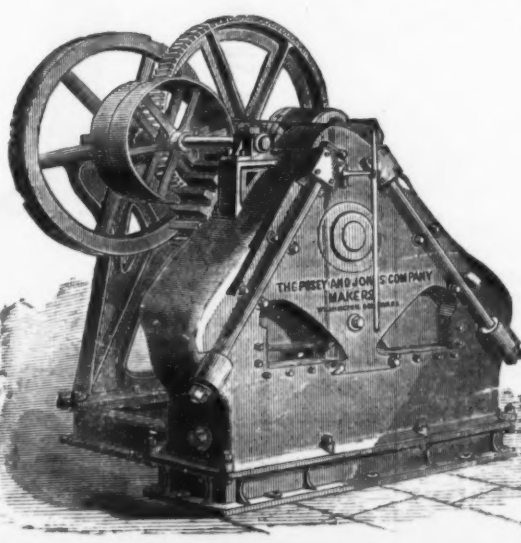
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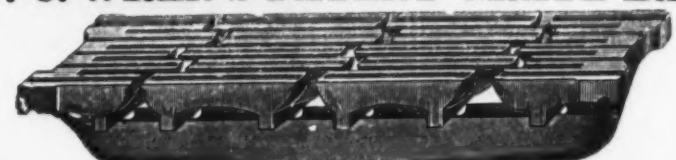
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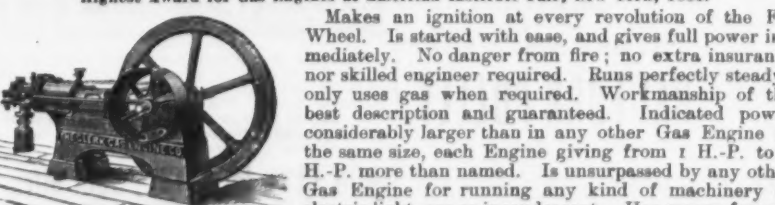
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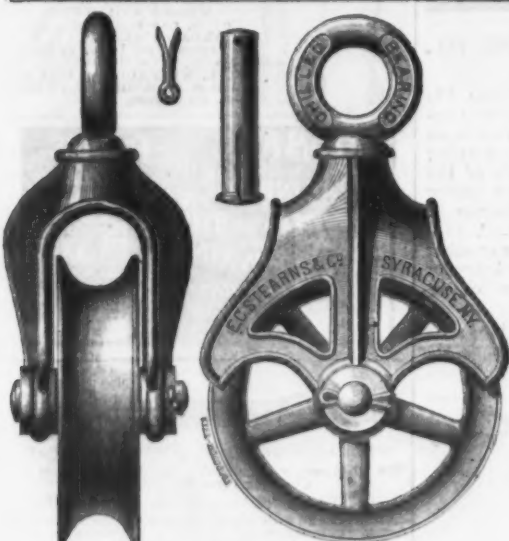
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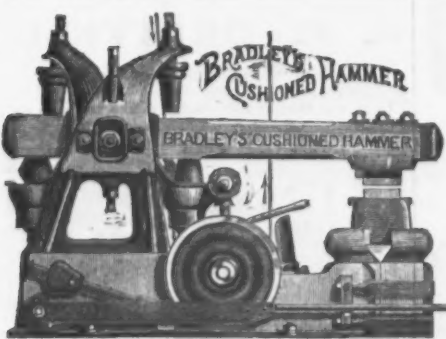


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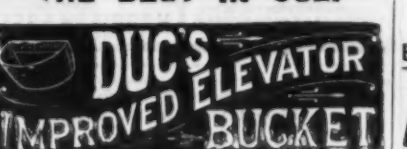
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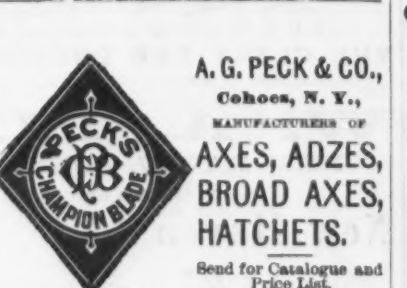
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